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ASTOR, LENOX AND
TILDEN FOUNDATIONS

Copper Manual

COPPER MINES,
COPPER STATISTICS, COPPER SHARES

AND

A Summary of Information on Copper, Etc.

BY

D. HOUSTON & CO.
METAL BROKERS
NEW YORK

....VOLUME 2....

D. HOUSTON & CO., Publishers
New York

1899

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PREFACE.

Since the publication of the first "Copper Manual" in December, 1897, a new epoch has commenced in the history of copper in all its ramifications. This industry has become one of the greatest and most important in existence.

Recently very many new copper properties have been projected, and some old ones which were closed down and idle for years have been resuscitated again. The discovery and development of new copper mining properties has gone at a rapid rate. Copper mining companies have been organized and combinations formed with huge capital in many instances. There can be no doubt that many of the new copper properties will develop magnificent results, while others now only in an incipient stage will ultimately be productive of gratifying returns. Some of the copper properties which have been projected lately may possibly be disappointing to those interested. Time and developing work alone can demonstrate the extent and value of any mining property.

While recording in this volume of the "Copper Manual" the articles embodied therein, it is seen what wonderful progress has been made by the various enterprises engaged in the production of copper throughout the world. A tremendous momentum has been given to the mining industry and the production of copper. The expanding consumption of copper has been in full ratio with production. For a lengthened period recently the article of copper in all its bearings has engrossed and absorbed the attention of the whole civilized world as never before, and it promises to continue a mighty factor of civilization in the future.

The articles presented in this "Copper Manual" have been carefully compiled, and the aim has been to give in condensed form the present status of the various concerns engaged in the mining of copper. The co-related interests which are intimately associated with copper, whether as manufacturer or investor, receive due attention. The design and scope of the work is to furnish reliable information on the subjects treated.

With the many new mining enterprises floated lately, which, while they may be considered very promising properties, although largely undeveloped as yet, they can only be regarded at present as prospects. It would be unreasonable to stand sponsor or to vouch for any property whose productive capacity has never been demonstrated. The part of wisdom for investors to pursue would be to scrutinize carefully and investigate to their satisfaction previous to putting money into enterprises which appeal to capital.

If the value of the entire copper output of the United States for the year 1899 should be calculated at 17 cents per pound it would be approximately worth about $102,000,000, or $37,537,000 more than the gold output of this country for 1898.

It is a noteworthy fact that about three-fourths of the total domestic copper production of this country is derived from eight or nine properties, thereby concentrating the control of this metal in comparatively a few hands. During the year 1899 the copper companies of the United States have paid more than $25,000,000 in dividends.

In the preparation of this work we have been placed under many obligations to quite a number of persons for the courteous and hearty manner with which they have placed at our disposal information of a valuable character, for which they are held in grateful esteem.

Trusting that this Volume No. 2 of the "Copper Manual" will be received with an equal degree of favor as was that accorded to Volume No. 1, our patrons and readers are cordially invited to consult the contents of this new work.

D. HOUSTON & CO.

D. HOUSTON. R. J. HOUSTON.
New York, December, 1899.

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The present volume of the "Copper Manual" contains photographs of the following named gentlemen, viz.:

OHN STANTON, President of the Wolverine Copper Mining Co. and Secretary and Treasurer of the Atlantic Mining Co.

LEONARD LEWISOHN, of the firm of Lewisohn Brothers, Copper Mining Companies' Agents.

ADOLPH LEWISOHN, of the firm of Lewisohn Brothers, Copper Mining Companies' Agents.

ROBERT M. THOMPSON, President of the Orford Copper Co.

A. A. COWLES, Vice-President of the Ansonia Brass and Copper Co.

WILLIAM R. TODD, Secretary and Treasurer of the Quincy Mining Co.

J. R. STANTON, Secretary and Treasurer of the Wolverine Copper Mining Co. and President of the Phœnix Copper Co.

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T. B. DUNSTAN, Ex-Lieutenant Governor of Michigan.

STANLEY GIFFORD, Treasurer of Montana Ore Purchasing Co.

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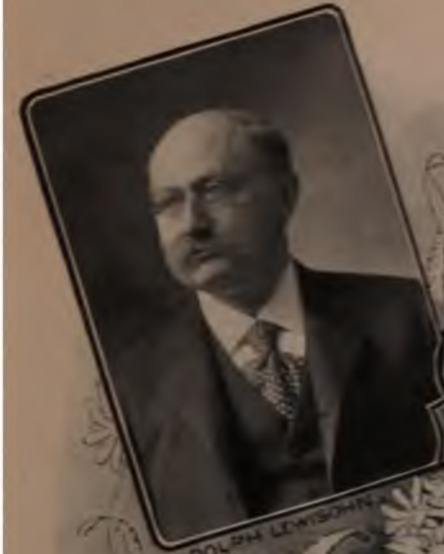

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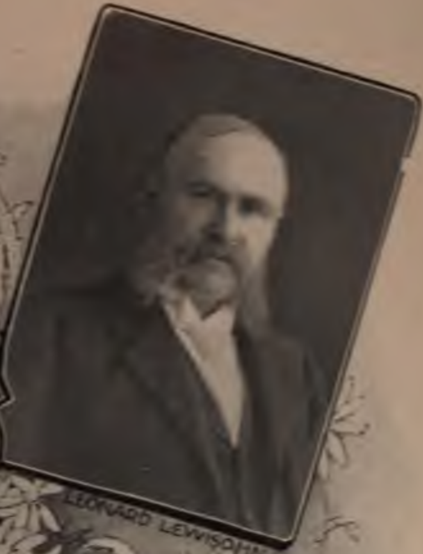

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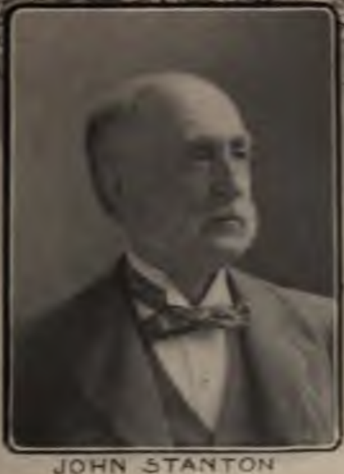

JOHN STANTON

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Copper.

Copper mining is attracting more attention than ever before, and this industry has developed into one of gigantic dimensions. The methods of extracting and treating the copper bearing ores have reached the highest stage of scientific attainment ever known in the history of metallurgy, whereby even very low grade ores can be made commercially valuable. With the present up-to-date mining methods, as practiced by operators possessing the most recent modern equipments and facilities, copper mining companies have succeeded in scaling down fixed charges to such a low level as thereby enables producers in many cases to show enormous net profits. The percentage of earnings from copper mining has lately risen with rapidity, and to astonishingly high figures, reaching in some instances 200 per cent. Enterprises capable of being managed in a way that will return such fabulous gains as above stated will, as a matter of course, come prominently before the public eye, and be subjected to close inspection by those who have capital to invest, and especially where the question of security and dividends is considered of paramount importance. The copper properties have returned a rich harvest of magnificent profits to both the operating companies and also to the investors in the copper shares, and as a natural result they are engrossing widespread attention.

The position of copper and of the copper market has of late been altogether unique. Recent events have been so dissimilar from anything known formerly in connection with this metal and its market career that analogy in many points is lacking, so that it would not be safe to presage the future by what is ordinarily regarded as precedent. New conditions exist. The law of progress is eclipsing all past records. Inventive genius is coming to the front, and the march of civilization moves forward with dazzling alacrity. Electricity has been conquered and waits to fulfill man's pleasure. It has become a swift and reliable means of locomotion, and will undoubtedly still further revolutionize travel in the near future; it carries the human voice by means of the telephone over great distances with the rapidity of a flash, its innumerable wires are kept tremulous with the millions of messages whereby the civilized and commercial world is kept in constant touch, and all these mighty achievements require copper to convey the power and the current necessary in the perfect utilization of these wonderful agents. And yet the science and application of electricity is only in the process of development. As to future attainment, who would venture to say what possibilities are in store yet for the world along the line of electrical development?

As copper is the electrician's metal, the field for its use is ever expanding, and with the awakening desire for the accompaniments and improvements of the highest civilization, there will arise a demand for the multiplication and remultiplication of electric railways, telephones, electric lights, etc., so that the position of copper as a factor of the greatest importance in the future development of electric progress is self-evident. The other branches of trade are also absorbing vast quantities of copper, and mills have recently been running under full pressure to meet the demand for manufactured brass and copper goods. The great activity in ship building, the proposed construction of new war vessels by the different governments of the world, and the determination manifested by the great nations of the earth to put both their land and marine forces in a state of thorough equipment creates other channels of outlet for copper. A note of wonderful progress has been struck that must continue to grow marvellously under the impetus of a tremendous demand for copper. The metal is sought for so many purposes and put to so many uses nowadays that even the present unprecedented production is engaged in a neck-to-neck race in the effort to keep up with a greatly expanded consumption, whose power of absorption has not yet been fully realized, but which has assumed colossal proportions.

For the calendar year of 1898 the copper production of the world is returned at 424,126 long tons of fine copper, or at the rate of 1,162 tons for each and every day of the year. If this one year's copper output was loaded on cars, allowing 25,000 pounds to a carload, it would require 38,001 cars to haul it; and if these cars were all coupled together they would make a train 431 miles long. If made into ingots and packed into casks the aggregate copper output of last year would fill 760,032 barrels, each weighing 1,250 pounds; and if these barrels could be placed one on top of the other they would make a pyramid 503 miles high. Calculated at 12 cents per pound, the world's copper production for 1898 would be worth $114,004,828; if figured at 16 cents per pounds, the market value would be equivalent to $152,006,438. The aggregate production of copper last year was the largest on record, being 28,336 tons greater than for 1897. Nevertheless, consumption not only proved equal to the enormous output, even at the newly established level of prices, but European copper statistics showed an actual reduction in the foreign visible supply at the end of last December of 4,059 tons, compared with January 1, 1898. The continuous and rapid absorption of such immense quantities of copper shows the legitimate and wonderful extent of the demand. Although the output has been unprecedented, there was a deficiency in amount to meet the requirements of trade, and stocks had to be drawn on to supplement the greatly expanding consumption of the metal. For a considerable period there was a scarcity of copper, particularly of Lake, for prompt delivery, and available supplies of spot stock for several months in 1899 were remarkably short. Producers at Lake Superior have been shipping copper by all rail regularly throughout the past winter, and paying the extra freight in order to meet their customers' pressing demands for the metal.

The United States occupies the foremost position as a producer of copper. In 1880 this country produced only about 17 per cent. of the world's copper product; in 1890 43 per cent., and in 1898 55 per cent. This country has led the world in the production of copper since 1883, when it produced 51,570 tons, against 44,607 tons for Spain and Portugal, and 41,099 tons for Chili, in that year. Since 1895 the United States has produced more than half the world's total copper output, and there is reason to believe that this will continue to be the case for an indefinite period. During the past six years the copper product of this country amounts in the aggregate to 2,525,761,280 pounds of fine copper. If this copper was made into ingots, each ingot weighing 15 pounds, and being 10 inches long, the American copper output for the past six years would make a girdle composed of these ingots long enough to encircle the entire globe, and have 1,575 miles of ingots left over; loaded on cars containing 25,000 pounds to a car and placed one behind the other, they would reach a distance of 1,148 miles. The product yielded by our domestic copper mines from 1893 to 1898 inclusive, at even the low average of 10 cents per pound, represents a value of $252,576,128. Truly an industry of such dimensions is an important factor in the country's development and progress. The three great copper producing districts are Montana, Lake Superior and Arizona. Montana produces more copper than any other center in the world, while the Lake Superior product is recognized as the best copper in existence. One copper mining company in this country produces over 100,000,000 pounds annually, two over 60,000,000 pounds each, two over 30.000,000 pounds each, and seven over 10,000,000 pounds each. The domestic output of copper is now twelve times as great as in 1876, and two months' recent production equals that for the entire year of 1882. The home production for the first five months of 1898 was as large as that for the year 1888.

This country is not only the greatest producer of copper, but it is also the largest exporter of copper, compared with any other country. During the past year the exports were

61.9 per cent. of the total production for 1898, and for the past six years the shipments from United States ports aggregated 1,393,672,000 pounds fine, or 55 per cent. of the total domestic production during the period mentioned. By deducting exports from production and reckoning the remainder as the quantity consumed by the home trade, to which is added copper imported for use here, the apparent domestic consumption of copper for the year 1898 was estimated at 113,338 tons. As there are no supplies to speak of carried in public warehouses here, stocks of copper in this country comprise copper at the mines, copper in course of treatment and copper in transit. The unexported metal, with imports added, therefore, furnishes the most reliable means of estimating American consumption. Domestic stocks of copper situated as above mentioned may be calculated as being approximately equal, under ordinary circumstances, to about two months' production. But this amount of copper is necessary for carrying on the industry, and representing as it does copper in mineral and in electrolytic refineries and smelting works, cannot be considered in the same light as copper carried in warehouse, where it is immediately available for the market. In the latter case stocks thus carried might be used to influence market values, but in the case of the material at mines, smelting works and refineries, or in transit, from thirty to sixty days is required to prepare it for the market. The fact that of late copper has been rushed from smelting works and refineries often as soon as it is ready for the consumer's use, there has been no chance for any accumulation of supplies in this country that could be considered in the nature of a menace to the market.

The development and growth of copper mining in this country furnishes a remarkable example of prosperity. From 1847 to 1884, a period of 37 years, Lake Superior furnished from 51 to 96 per cent. of all the copper produced in the United States. Since 1884, when Montana and Arizona began to produce largely, these two districts have had a combined output exceeding that of Lake Superior, excepting in the year 1886. During the years 1894 and 1895 Montana alone produced about half the total domestic copper output. Since 1896, however, Arizona has come into much greater prominence as a copper producing centre, and although Montana is at present the greatest producer, compared with any other district in the world, the percentage of the copper output from Montana in 1898 was but a very little more than 40 per cent. of the total United States production, against about 50 per cent. in 1895. The Lake Superior copper production was about 29 per cent. of the total domestic output last year, as compared with 83 per cent. in 1877 and 51.3 in 1886. Arizona contributed 20.3 per cent of the total home product last year, compared with 15.8 per cent in 1897, 12.6 in 1895 and 9.7 in 1887. Arizona produced 30,164,177 pounds more copper in 1898 than in 1897, being an increase from that district for last year of 37 per cent. in twelve months. There was a decrease in production in Montana during 1898 which amounted to 7.5 per cent. compared with the previous year. This decrease was owing principally to the reduction by the Anaconda Company on account of fire at those mines.

Lake Superior increased its output last year 9.1 per cent., and the total United States copper production for 1898 shows an increase of 6.8 per cent., compared with that for 1897. The following are the returns of domestic copper production for 1898, compared with that for 1897, in pounds fine:

	1898.	1897.	Increase.
Montana	219,249,102	237,158,540	*17,909,438
Lake Superior	159,147,492	145,839,749	13,307,743
Arizona	111,183,199	81,019,022	30,164,177
Other sources	40,788,000	33,170,172	7,617,828
Copper in sulphate	15,000,000	13,003,236	1,996,764
Total	545,367,793	510,190,719	35,177,074

* Decrease.

The United States production of copper during the past six years has increased 64 per cent.; but during the same period the exports of copper from this country have increased 80 per cent. Shipments of copper from this country to Europe for the year 1898 amounted to 2,635 tons more than the total United States production for the year 1893, and exceeded by 3,780 tons the aggregate production of copper by Spain and Portugal, Chili, Japan, Australia and Germany for 1890. The domestic exports of copper last year were equivalent to more than the entire output of the Anaconda, Calumet & Hecla, Boston & Montana, Parrot, Quincy, Osceola, Atlantic and Wolverine mines for the twelve months of 1898. The importance of the foreign demand for our copper is therefore readily seen, and were it not for the tremendous European consumption the outlet for home production would not be half great enough to absorb the American product. The United States exports of copper in 1898 were valued at $34,354,312, and for the past three years our copper exports had a total valuation of $96,397,480. The world has its eye directed to this country as the principal copper producer, and as the chief source of supplies for this metal. The international character of the demand for American copper is of immense value and scope, and while this continues prosperity is assured to the copper mining interests.

Greater mining possibilities are also looming up, and the concentration of large enterprises in copper has recently developed. The introduction of Standard Oil interests into the field of copper mining has resulted in the formation of the Amalgamated Copper Company, the incorporation of which it is understood will eventually embrace many important producers, the plan being to perfect a great consolidated company to operate a long string of properties under one management. Investors possessed of great wealth are taking advantage of meritorious openings where their money can be profitably invested, and the copper mining properties have succeeded in attracting capital as never before. With an 18 to 19 cent copper market, which has been a characteristic feature of the metal in 1899, the net earnings of quite a number of the copper companies have been equivalent to 200 per cent. and over. It is not strange under these circumstances that many of the copper mining shares have lately broken all former records in market values. Even at the extreme high prices touched by the copper shares during the first half of this year, several of the leading copper companies have been earning profits at the rate of from 10 to 13 per cent. on the late high record-breaking prices of the shares. The following examples will show what the copper companies can do. If the production of the Calumet & Hecla is stated, say, at 90,000,000 pounds per annum, costing, say, 6 cents per pound laid down at New York; Boston & Montana production 60,000-000 pounds per year at a cost of, say, 6 cents per pound; and should the market price of copper for the year 1899 average 16 cents per pound, the Calumet & Hecla would be able to show net earnings for the year amounting to $9,000,-000, and Boston & Montana net earnings of $6,000,000 per annum. In nine and one-half years under above mentioned conditions the net earnings of Calumet & Hecla would equal the total market valuation of this property at $850 per share, or $85,000,000. In the same period of time and with same conditions prevailing as before mentioned, Boston & Montana net earnings would be equivalent to the market value of this company at $380 per share, or $57,000,000. Among the smaller producers the Wolverine, on the basis of last year's output and cost, in a period less than eight and one-half years could show aggregate net profits equivalent to $50 per share, or $3,000,000 with a continuous copper market at an average of 16 cents. The Quincy under similar market conditions for copper as noted in the above calculations, and estimating its ability to keep the cost of production down to 6 cents, at the rate of output for 1898 should show net earnings in 10½ years aggregating fully $17,000,000, or $170 per share. These examples are sufficient to demonstrate the remarkable success which the reliable copper mining companies are enjoying, and why copper shares are so pop-

A. A. COWLES.

ROBERT M. THOMPSON.

WILLIAM R. TODD.

J. R. STANTON.

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ular among those who have investigated the solid character of the copper industry, and who are seeking safe and remunerative channels of investment into which capital may venture with high prospects that both principal and interest will be extraordinarily secure. New copper properties of great promise have recently been organized, and these are described elsewhere in this work.

United States Copper Production.

United States copper production, for a period of 54 years, was as follows, compiled from Government returns, including copper from imported pyrites and ores:

Year.	Quantity—Lbs.
1845	224,000
1846	336,000
1847	672,000
1848	1,120,000
1849	1,568,000
1850	1,456,000
1851	2,016,000
1852	2,464,000
1853	4,480,000
1854	5,040,000
1855	6,720,000
1856	8,960,000
1857	10,752,000
1858	12,320,000
1859	14,112,000
1860	16,128,000
1861	16,800,000
1862	20,160,000
1863	19,040,000
1864	17,920,000
1865	19,040,000
1866	19,936,000
1867	22,400,000
1868	25,984,000
1869	28,000,000
1870	28,224,000
1871	29,120,000
Total 27 years	334,992,000

UNITED STATES COPPER PRODUCTION—CONTINUED.

Year.	Quantity—Lbs.
1872	28,000,000
1873	34,720,000
1874	39,200,000
1875	40,320,000
1876	42,560,000
1877	47,040,000
1878	48,160,000
1879	51,520,000
1880	60,480,000
1881	71,680,000
1882	90,646,080
1883	117,151,795
1884	147,805,407
1885	170,962,324
1886	162,263,043
1887	185,227,331
1888	231,270,622
1889	231,966,214
1890	265,780,133
1891	295,812,076
1892	352,971,744
1893	339,785,972
1894	364,866,808
1895	385,913,404
1896	465,961,430
1897	506,078,274
1898	546,262,987
Total 27 years	5,324,405,644

Total quantity produced in the past 54 years, 5,659,397,644 lbs. fine.

Anaconda Copper Mining Company.

There is no copper mining property in existence that has ever turned out an annual copper product equal to the Anaconda. For the last three years it has been able to produce an average of 121,345,293 pounds annually. Since May 1, 1896, the present company has been paying dividends amounting to 10 per cent. a year on the capital stock of $30,000,000. On November 1, 1899, the regular semi-annual dividend of $1.25 per share was paid, and an extra dividend of 75 cents per share. Total dividends since reorganization of company in June, 1895, to and including November 1, 1899, aggregate $12,150,000. Profits for the three years ending June 30, 1898, foot up $12,945,908.92. The company has issued no report for the year ending June 30, 1899, therefore the profits for the last fiscal year cannot be included here. Since 1884 to June 30, 1898, the total production of the Anaconda Company is as follows:

Ore	9,575.793 tons.
Copper	1,068,922,000 pounds fine.
Silver	40.658,103 fine ounces.
Gold	135,244 fine ounces

The Anaconda Company operates a group of 11 mines, and the management of this immense property requires the steady employment of between three and four thousand men. The following mines furnished the product of the company last year, viz.: Anaconda, St. Lawrence Nos.

1 and 3, Bell, Diamond, High Ore No. 2, Buffalo, Mountain Consolidated Nos. 1 and 2, Green Mountain and Never Sweat.

THE ANACONDA.—The main shaft at this mine is vertical, with three compartments, and is down 1,600 feet, of which 200 feet were sunk in 1898. A new hoisting engine was installed at this shaft last year, and two combination skips and cages for hoisting ore and waste. The skips have a capacity of about five tons each. Altogether there are 27 exits from this mine, and levels are driven from the shaft every 100 feet. There are connections with the St. Lawrence No. 2 on the east, and with the Never Sweat on the west down to the 1,400-foot level, besides a crosscut 2,500 feet long connecting the Anaconda with High Ore No. 1, which is situated at the extreme eastern end of the company's chain of mines. Connections are also established between this mine and the Bell Mine, and with St. Lawrence No. 1. This shaft usually supplies the largest quantity of ore.

ST. LAWRENCE NO. 1.—Sinking was done for 100 feet at this mine in 1898, and the main shaft is three-compartment, having a total depth of 1,500 feet. The St. Lawrence has a difference in elevation of 200 feet above the Anaconda Mine, the 1,200-foot level in the St. Lawrence being the 1,400-foot level of the Anaconda. This mine has a hoisting engine 30-in. x 72-in. cylinders, having a capacity of 3,000 feet, and which is said to be the largest hoisting engine in Montana. There are 17 exits from the St. Lawrence.

HIGH ORE NO. 2.—The main shaft has three compartments and is down 1,600 feet. It is one of the largest in the Butte District, being 18 x 5 inside the timbers. This shaft is connected at the 1,000-foot level with the Modoc Mine, and on the 1,500-foot level a drift is run toward the Buffalo Mine, which is intended as a means to convey the water from all the mines, and may also serve for hauling ore. A new hoisting engine 30 in. x 72 in. was put in place last year. Safety appliances, fire equipment and several exits at this mine are provided for the protection of the miners.

THE DIAMOND.—The shaft was sunk 500 feet in 1898, and 550 feet in 1897. It is a two-compartment shaft, and is down 1,700 feet. Below the 1,000-foot level there are three compartments. The shaft timbers are 12 x 12, and 10 x 10 square sets are used in the stopes. A hoisting engine of 20 x 60 dimensions is in use. Connections are made at several levels with the Bell Mine, and 12 exits are provided.

MOUNTAIN CONSOLIDATED NO. 1.—This is one of the deepest shafts of the Anaconda group and is down 2,000 feet, of which 600 feet were sunk in 1898 and 400 feet during 1897. It has three compartments. A four-cylinder compound engine, 46 x 72 and 26 x 72, does the hoisting, and is of such a powerful type that it is capable of hoisting four double-deck cages from a depth of 3,000 feet, and weighs 800,000 pounds. There are connections with the Mountain Consolidated No. 2 on each level above the 1,300-foot level, and a duplex air compressor of 90 drills capacity is in constant use. On several levels there are also connections with this mine and the Green Mountain Mine.

THE GREEN MOUNTAIN.—The main shaft at this mine is down 2,100 feet and is the deepest vertical shaft in Montana. It has three compartments, and 500 feet were sunk in 1898. One of the most powerful engines is in place with a capacity of hoisting three decked cages from a depth of 2,500 feet. There are connections with the Wake Up Jim and Mountain Consolidated No. 1, and 10 exits from the mine.

MOUNTAIN CONSOLIDATED NO. 2.—This mine has a main shaft with three compartments and is down 1,600 feet, of which 100 feet were sunk during 1898. It is timbered with 12 x 12 shaft timbers and 10 x 10 square sets in the stopes. There are 11 exits and connections with two adjoining mines of the company.

NEVER SWEAT.—Active operations have been conducted at this mine, and the three-compartment shaft is down 1,800 feet, 400 feet having been sunk in 1898. Last year the erection of two compound compressors was completed, and six 250-horse-power boilers ordered in addition to the five 250-horse-power boilers then in operation. These compressors and boilers are to furnish air for the hoisting and pumping machinery underground instead of using steam. The substitution of compressed air for steam power in the underground workings has been found necessary on account of the water passing through the fire district where it raged in portions of the Anaconda workings becoming so heated, in conjunction with the exhaust steam from the steam pumps and engines, that metallic substances coming in contact therewith have been destroyed.

A fire, which had been smouldering for years, and was thought to have been extinguished, broke out when certain bulkheads were removed in a portion of the Anaconda property, and it became necessary last year to pour a great volume of water into the burning district. On account of the fire the product of the company was only 107,214,059 pounds of copper in 1898, against 131,471,127 pounds in 1897. The fire was not of great extent, but the escape of gas rendered it impossible for the miners to work in its vicinity. The extraction of ore was therefore lessened last year, and that in a portion of the mine where the grade of ore is higher than in the other workings. After the fire was got under control the portion of the mine affected thereby was reopened and the work of removing débris and cleaning up attended to preparatory to the resumption of the maximum production.

ST. LAWRENCE NO. 3.—This shaft was started in March, 1897, in the burnt district where the fire of 1889 occurred, and is down 600 feet. It is a two-compartment shaft and is about 240 feet west of St. Lawrence No. 2, and 400 feet were sunk in 1898. The company has commenced this shaft for the purpose of getting at the ore in the burnt district, but notwithstanding the lapse of years the air at the new opening was found in some places strongly impregnated with gas.

THE BELL.—This shaft was formerly known as "High Ore" and is down 1,650 feet, of which 150 feet were sunk in 1898. The ledge is found at the 900-foot level. A seam of talc is found here, and notwithstanding the difficulty of keeping the shafting in place, the obstacles, with the characteristic ability displayed by the management, are successfully overcome. There are 13 exits from this mine.

THE BUFFALO.—The shaft at this mine has three compartments and was sunk 600 feet during 1898 and is down 1,600 feet. It is used at present as an air shaft to afford better ventilation to Mountain Consolidated No. 1 and No. 2, and work is conducted through Mountain Consolidated No. 2.

The Anaconda Company have other properties besides those enumerated, and the extent and resources of the same are so gigantic as to make the enterprise one of the most remarkable among the mining interests of the world. The company's sales of copper for the fiscal year ending June 30, 1898, amounted to $14,605,588.45, and the sales for the 12 months stated of copper, silver and gold aggregated $18,254,849.31, or an average for every day in the year of a little over $50,000 in sales.

The following statement shows the sales and prices realized for copper, silver and gold for the three fiscal years named:

Fiscal Year.	Copper. Lbs. Sold.	Copper. Price Per Lb.	Silver. Fine Ozs. Sold.	Silver. Price Per Oz.	Gold. Fine Ozs. Sold.	Gold. Price Per Oz
1895–6	85,476,795	10.03 cts.	4,498,560	67.91 cts.	14,384	$20.62
1896–7	120,864,097	10.76 "	6,057,067	64.08 "	18,511	20.65
1897–8	135,002,147	10.82 "	5,706,377	56.78 "	19.930	20.07

The foregoing transactions cover the first three years of the present company's existence.

The total expenses at the mines and reduction works for the fiscal year ending June 30, 1898, after deducting profits on operations of subsidiary departments, amounted to $11,511,999.64, including $802,956.96 expended on new construction and new machinery. Profit for the year ending June 30, 1898, was $3,551,346.22, against $5,136,048 profit for the year ending June 30, 1897. The decrease in profit for the fiscal year ending June 30, 1898, was largely owing to the increased expenditure at the reduction works, the decline in the market price of silver, and increased cost of copper produced, besides extra expenses incurred in shaft sinking, and other items of loss through fire. The Anaconda product of electrolytic copper for the year ending June 30, 1898, was of a high grade and uniform quality, more than 99.9 per cent. of it being above the requirements and tests for the highest grade of copper.

The largest item in the list of mining expenses for the fiscal year ending June 30, 1898, was that of $3,376,501.83 for labor, and the largest item connected with the expenses at the reduction works during the same year was $2,810,268.98, for smelting, and in the latter item is included the sum of $1,249,981.05 for coal. The deeper sinking of shafts and new development work has necessitated a great deal of new machinery. Total net expenditures for mining and at reduction works during the first three years of the company's operations aggregate $32,352,720.59. There were also additional expenses for freight, refining charges at the Baltimore works, interest, etc. Total receipts from sales of copper, silver and gold during the three years ending June 30, 1898, amounted to $47,452,519.85 and total profits for said three years were $12,945,908.92. The dividends in this period were $6,750,000, leaving a balance of $6,195,908.92. Roughly speaking, the President says, about $1,000,000 of this surplus has been devoted to an increase in capital, and the remainder of $5,200,000 is represented by working capital in the shape of stocks of copper, silver and gold, stores and supplies and cash assets.

At Anaconda, about 27 miles from Butte, the company operate their great Reduction Works, the value of which is placed at $6,444,677.16. The daily average output of ore from the mines has run as high as about 3,950 tons for a year at a stretch. This ore is shipped to Anaconda, where the process of concentration, converting, smelting and refining is carried on in the great establishments erected for that purpose. Enormous stamps crush the ore, after which it is ready for further treatment in the 156 Brückner furnaces employed at the works. The Anaconda matte coming from the reverberatory furnaces carries about 62.5 per cent. copper and from 60 to 70 ounces of silver. The matte is sent to the converter plant, where it is converted into Bessemer pig copper having an average purity of 99 per cent. copper and containing about 100 ounces of silver to the ton. This copper is melted and cast into anodes in tilting furnaces for the purpose and then electrolytically refined into bars of high conductivity from which the gold and silver has been extracted.

The Refining Plant is contained in two buildings which are about 100 feet apart. Some 600 tanks are in use in the electrolytic works. A few years ago the converter plant was enlarged and improved at an expense of $518,643, including new machinery, etc., at the smelting and concentrating plants. The new electrolytic plant was also erected at about the same time at a cost of $540,507. A great deal of money has since been expended on these plants in making improvements and extensions. For some time the company have had half of their output refined by the Baltimore Copper Smelting & Rolling Company at Baltimore, Md. Notwithstanding the vast amount of copper and precious metals already produced by the Anaconda mines, there are enormous quantities of ore reserves in the deeper levels which will undoubtedly yield rich returns for many years to the owners of this gigantic mining enterprise.

LOWER WORKS OF ANACONDA COPPER MINING COMPANY

SMELTER OF THE ANACONDA COPPER MINING COMPANY.

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Officers of Anaconda Copper Mining Company:

Trustees:

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WM. ROCKEFELLER. WM. G. ROCKEFELLER, Treasurer.
WILLIAM L. BULL. R. T. BAYLISS.
ALBERT C. BURRAGE.

Secretary:

W. H. DUDLEY, Anaconda.

Assistant Secretary:

H. ESK-MOLLER, New York.

Offices:

ANACONDA, MONTANA. BUTTE, MONTANA.
52 BROADWAY, NEW YORK.

Assistant Treasurer:

F. P. ADDICKS, New York.

ANACONDA COPPER MINING COMPANY.

Production of fine copper by the Anaconda Copper Mining Company, by months, during 1897 and 1898, in pounds:

	Year 1897. Fine Copper, Lbs.	Year 1898. Fine Copper, Lbs.
January	11,062,964	9,978,648
February	10,068,516	10,065,626
March	11,079,084	8,071,480
April	11,015,681	12,183,212
May	12,341,229	12,279,936
June	13,632,244	9,567,160
July	7,087,734	2,928,269
August	10,044,654	8,359,302
September	10,047,814	8,582,544
October	9,016,774	9,036,103
November	10,017,171	8,135,922
December	16,057,262	8,025,787
Total 12 months	131,471,127	107,214,059

LIABILITIES AND ASSETS OF ANACONDA COPPER MINING COMPANY.

BALANCE SHEET, JUNE 30, 1898.

Assets.		
Mining Claims and Properties	**$19,276,969.18**	
Purchases during the year	**2,508.20**	
	$19,279,477.38	
Less sales	**1,000.00**	
		$19,278,477.38
Lands and Improvements at Butte, etc		**261,701.60**
Reduction Works at Anaconda		**6,444,677.16**
Subsidiary Departments		**5,160,603.20**
Other		**6,496,644.55**
		$37,642,103.89
Liabilities.		
Capital Stock, 1,200,000 shares of $25 each		**$30,000,000.00**
Loans, Outstanding Drafts, Pay Rolls, etc		**1,424,026.22**
Unpaid Dividend Warrants		**22,168.75**
Profit and Loss Account:		
Balance, June 30, 1897	**$5,644,562.70**	
Add profit for year ending June 30, 1898	**3,551,346.22**	
	$9,195,908.92	
Less Dividends paid	**3,000,000.00**	
		6,195,908.92
Profits for 3 years to date, since organization of company	**$12,945,908.92**	
Dividends declared	**6,750,000.00**	
Surplus as above	**$6,195,908.92**	
		$37,642,103.89

Calumet & Hecla Mining Company.

This greatest of Lake Superior copper properties, since the beginning of operations to October 1, 1899, has disbursed among its shareholders dividends amounting to the enormous sum of $63,850,000 and produced in the aggregate something like about 1,385,000,000 pounds of refined copper. Dividends began on May 15, 1871, and have continued without interruption every year ever since. The product of the company in refined copper for the fiscal year ending April 30, 1899, was 88,901,133 pounds, as compared with 90,388,346 pounds for the previous fiscal year, and 92,475,595 pounds for the fiscal year ending April 30, 1897. During the past fiscal year $70 per share, or $7,000,000, was paid in dividends. Of this amount $3,000,000 was from surplus cash. Since January 1, 1899, to October 1, 1899, the company has paid $80 per share in dividends. A distribution of $80 per share is equivalent to the valuation of over 44,425,000 pounds of copper at 18 cents per pound, which is about half the quantity the company produced during the last fiscal year. Such tremendous earnings and disbursements have no parallel in the history of copper mining.

The company have twelve shafts on the conglomerate lode, which has proved the most wonderful vein ever discovered in the Lake Superior district. The shafts follow

CALUMET & HECLA SMELTING WORKS, SOUTH LAKE LINDEN, MICH.

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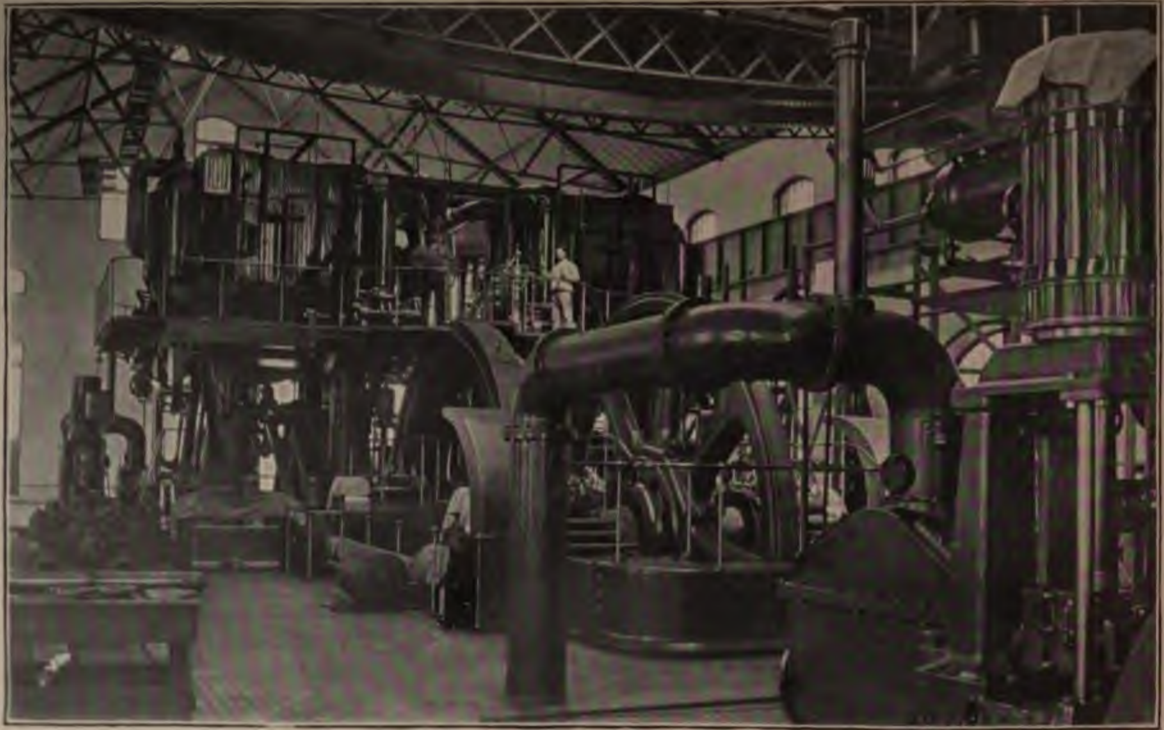
the incline of the vein at an angle of between 38 degrees and 37 degrees, northwest direction. In addition to the above mentioned shafts there is also the celebrated "Red Jacket" shaft, which has been sunk vertically to the great depth of 4,900 feet. The hoisting of rock has commenced from three levels at this shaft, and a large increase in product can be obtained from the "Red Jacket" opening. A few years ago three new shafts were started on the outcrop of the Osceola amygdaloid, and these shafts are designated Nos. 13, 14 and 15. No. 13 shaft is down over 1,000 feet, and Nos. 14 and 15 have each reached a depth of 900 feet. Openings on the amygdaloid belt have revealed promising copper ground, and it is the intention of the company to equip these three new shafts with new hoisting plants, and to make provision for increasing the general equipment and stamp mill facilities to an adequate capacity for handling the new output. The completion of these details is expected in the fall of 1901.

The Calumet & Hecla has immense bodies of ore in reserve, and the life of this celebrated mine is insured for a long time to come. There were no important changes at either of the company's smelting works during the past year. The number of men employed this year were 4,706, compared with 1,616 in 1874, and the comparative cost of hoisting rock was as 30 is to 9. Twenty-five years ago the quantity of rock hoisted in a day was 800 tons from an average depth of 800 feet along the slope of the shaft. During a day in the month of April, 1899, there was raised an average of 5,206 tons for a distance of 3,800 feet along the incline of the shaft. The amount of work done at the mine in 1899 is about thirty times as much as in 1874. The Calumet & Hecla can produce and lay down its refined copper in New York at a very low cost—probably close to 6 cents per pound—thereby enabling it to earn colossal profits.

Calculating the cost of production at 6 cents per pound, with a continuous market for copper averaging 18½ cents on an annual output of 100,000,000 pounds of refined copper, the Calumet & Hecla could earn $125 per share yearly, or at the rate of $1,250,000 a month. This would enable the company to pay $100 per share in dividends annually and leave $2,500,000 for surplus account. With copper 12 cents per pound and cost and production as above, the earnings would equal $60 per share per annum. The shares of this company have advanced in market value from $280 in 1895 to $895 on February 21, 1899. On September 5, 1899, they were $840. This great industrial enterprise is also managed with regard to the physical and educational advantages of its numerous employees. A public library, hospital, manual training school and other considerate provisions have been generously furnished for the welfare of those employed on the Calumet & Hecla properties, besides the extending of liberal aid to the two dozen or more churches established on the company's property.

Since the Standard Oil people have become interested in copper mines it has been stated that the Calumet & Hecla management have been offered over $1,000 per share for the control of the property, but promptly declined to accept the offer. The Calumet & Hecla was originally operated for a few years in their individual capacity as the



ENGINES MINONG AND SISKOWIT, RED JACKET SHAFT. CALUMET & HECLA MINE.

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"Calumet" Mine and the "Hecla" Mine. A consolidation of the two properties was effected in May, 1871, and after the consummation of the union the first dividend was paid on May 15, 1871, which was for $5 per share on 50,000 shares issued. The capitalization is now $2,500,000, divided into 100,000 shares of $25 each, of which $1,200,000 has been paid in. Dividends have been paid upon the latter number of shares ever since February 15, 1880. At the time of this writing the last dividend was $20 per share, payable on September 29, 1899. The largest dividend paid at one time was for $40 per share, being $10 regular and $30 extra, and was paid on March 23, 1899. Before the consolidation the "Calumet" paid in dividends a total of $300,000 and the "Hecla" $650,000. In 1866 the "Calumet" shares sold as low as $1 per share.

The Calumet & Hecla has a remarkable history, and it has also a great future ahead of it. With two miles of copper belt on its property, a penetration of 10,000 feet may perhaps be possible if hereafter found to be feasible. At a depth of 4,900 feet in the Red Jacket shaft the thermometer registers 87.6 degrees Fahrenheit, but the matter of being able to carry on operations below 5,000 feet will require future experiments and tests.

December 5, 1899.—Calumet & Hecla directors declared a dividend this date of $20 per share, payable December 29, 1899. This makes a total of $100 per share during the calendar year 1899, or $10,000,000. Total dividends declared aggregate $65,850,000.

ASSETS AND LIABILITIES OF THE CALUMET & HECLA MINING COMPANY.

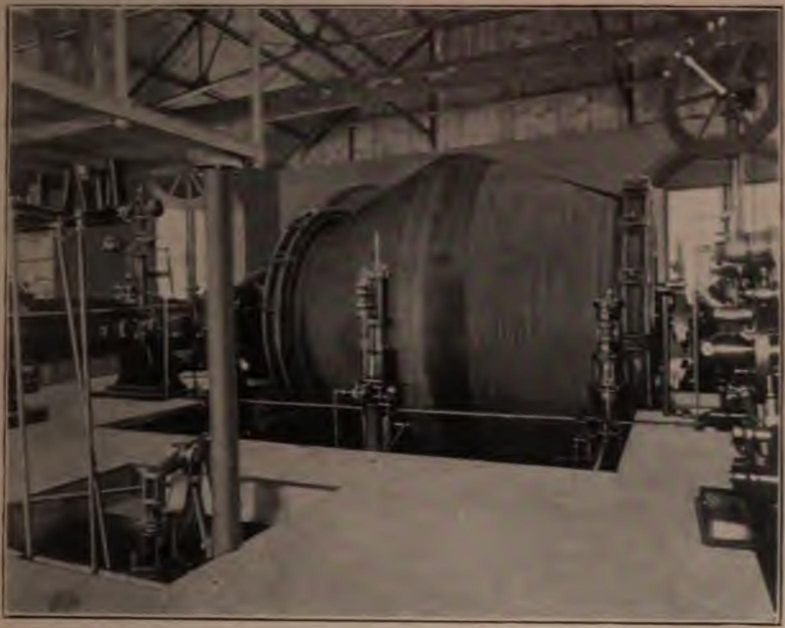
April 30, 1899.

Assets.

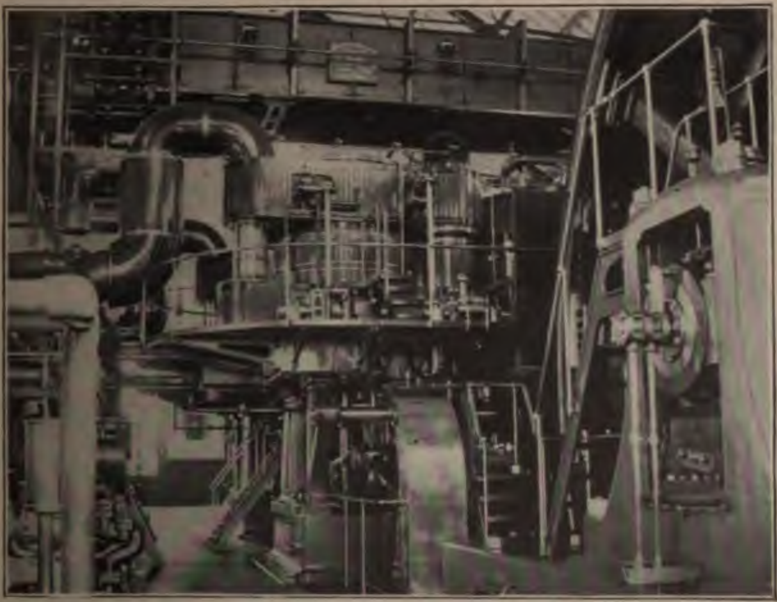
Cash at Mine Office	$112,281 33
" " New York Office	15,000 00
" " Boston Office, Exchange, Copper at 15 cts. per lb., and Mineral at 4 cts. per lb	5,207,798 30
Bills receivable at Boston and Mine	801,237 43
Insurance Fund	353,647 71
	$6,489,964 77

Liabilities.

Drafts in Transitu	$127,359 01	
Employees' Aid Fund	27,745 43	
Bills payable at Boston and Mine	291,315 87	
Contracts for Machinery, Coal Docks, Dredging Canal, etc.	645,000 00	
Cash set aside for R.R. additions and Equipment of Amygdaloid Lode at Mine and Mills	1,000,000 00	
		$2,091,420 31
Balance		$4,398,544 46



CORLISS HOISTING ENGINE, WITH DOUBLE CONE DRUM, AT "A" SHAFT OF ATLANTIC MINING COMPANY.



ENGINES HANCOCK AND PEWABIC. HOISTS FROM NOS. 7 AND 8 SOUTH HECLA, CALUMET & HECLA MINE.

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Officers of the Calumet & Hecla Mining Company are as follows:

ALEXANDER AGASSIZ, *President.*
T. L. LIVERMORE, *Vice-President.*
GEORGE A. FLAGG, *Sec'y and Treas.*

Directors:

ALEXANDER AGASSIZ,	F. W. HUNNEWELL,
T. L. LIVERMORE,	QUINCY A. SHAW, JR..
FRANCIS L. HIGGINSON,	JAMES N. WRIGHT,

GEORGE A. FLAGG, *Treasurer.*

Office of the company is at 12 Ashburton Place, Boston.

The production of refined copper by the Calumet & Hecla Mining Company for the past eight fiscal years ending April 30, was as follows:

Fiscal Year, Ending April 30.	Refined Copper. Pounds.
1892	56,495,211
1893	60,427,913
1894	61,324,000
1895	62,466,414
1896	85,552,756
1897	92,475,595
1898	90,388,346
1899	88,901,133

Boston & Montana Consolidated Copper and Silver Mining Company.

The mines of this company are exceedingly rich in copper bearing ores, and although its product includes gold and silver in considerable quantities, the chief value of the Boston & Montana Company lies in the fact that it is preeminently a copper producer at a remarkably low cost. Since 1890 it has increased its production of copper from 26,822,804 pounds in that year to fully 60,000,000 pounds in 1898, and the latter figures represent the annual output for the past several years. During the past four years the gross receipts from sales of copper, silver, gold and bluestone aggregate $25,811,235, whilst the total net earnings for the same period amount to $11,110,504, or equal to a little over $74 per share on the capital stock. Dividends paid to stockholders during the past four years foot up $6,750,000, or $45 per share, being an average for each of the past four years of $11.25 per share. Balance of assets have increased from $1,565,978.18 on December 31, 1895, to $4,516,246.89 on December 31, 1898. The company paid its first dividend, amounting to $2 per share, on August 20, 1888, and since that date to November 20, 1899, has paid in the aggregate 34 dividends, representing a disbursement from profits to the stockholders in company of a total of $14,525,000. Total bonds outstanding January 1, 1899, were $740,000, out of original issues amounting to $2,100,000. At the beginning of this year there was $55,895.08 available for redemption of bonds.

Turning from the consideration of the company's financial affairs to that of the mines and plant operated by the Boston & Montana, the data at our disposal show the physical features of the property to be in a state of high scientific development. Under the able management in charge of operations mine developments have been regularly and systematically conducted, and not only has the standard of output set a few years ago of 60,000,000 pounds of fine copper been annually maintained, but the ore reserves have been very materially increased. Operations are extensively carried on at five different shafts, each of which is entitled to rank as a mine in itself. The shafts or mines operated by this company are called the Pennsylvania, Mountain View, West Colusa, Leonard and East Colusa. Besides these there are the Moose Mine and Anderson Mine included in the Boston & Montana Company's property.

THE PENNSYLVANIA SHAFT is down 1,025 feet, of which 159 feet was sunk in 1898. It is three-compartment, with two double-deck cages in use. The workings at the 200 and 600 foot levels are connected east of the main shaft with Silver Bow No. 1, of the Butte & Boston. Several veins are operated at this shaft, and during the year 1898 the ore reserves are officially reported to have increased about 27 per cent. to 313,000 tons. There are four exits from this mine, and electric call bells at each level.

Horses are employed to haul the ore to the shaft on the 300-foot level, and also on the 600-foot level.

MOUNTAIN VIEW SHAFT is down 1,400 feet, 200 feet of which was sunk in 1898. It has also three compartments, and there are fourteen exits. The ore reserves were increased last year to 439,000 tons, or about 7 per cent. over the previous year. During 1899 the management expect considerable increase in ore reserves, due to developments on the ninth and tenth levels. There are connections at this shaft with both the West Colusa and Leonard shafts at several levels, and safety appliances are provided for the protection of the miners.

WEST COLUSA SHAFT was sunk 200 feet last year and is down 1,100 feet. The ore reserves at this mine were increased to 811,000 tons in 1898, which was a gain of 104 per cent. This shaft has three compartments, and is said to be the largest in dimensions in Montana, being 9 feet by 17 feet 8 inches in the clear. This shaft was enlarged to admit placing two ore cars, one behind the other, the long compartments also admitting the lowering of horses into the mine for tramming purposes. Horses haul the ore to the shaft on all levels, and are hoisted out at night.

THE LEONARD SHAFT has been sunk to the depth of 1,000 feet. A large force of men is employed at this shaft extracting ore and carrying on development work. During the past year the ore reserves increased 95 per cent. and were estimated in March, 1899, at 400,000 tons. There are connections on the west side, 1,400 feet from the main shaft, with the Mountain View on six levels, and on the east side at two levels with the East Colusa. It is also connected at the 700-foot level with the West Colusa. Drifting for 2,802 feet and crosscuts for 1,759 feet were done during the past year.

THE EAST COLUSA SHAFT has two compartments and is down 800 feet. There are connections with the Leonard and West Colusa shafts. The ore reserves were nearly quadrupled in 1898, and estimated at 192,000 tons last spring. Considerable bodies of low grade ore were found at this shaft, which were too low grade to work at a profit half a dozen years ago, but which under present treatment can be made to pay. Drifting and crosscutting were advanced last year.

The total amount of openings aggregates 33,008 feet, or 6¼ miles, as per official statement. The amount of ore in sight on January, 1, 1899 was placed at 2,161,597 tons, and these reserves, according to careful sampling, are expected to approximate last year's yield per ton. The company have been operating under lease the Butte & Boston smelter. The latter part of last year the concentrator ran largely on Butte & Boston ores, the Boston & Montana Company buying the concentrates and smelting them with their ores. The operations and costs at this smelter have been very satisfactory throughout 1898.

GREAT FALLS.—Additions and improvements have been made at these works in the very recent past and the capacity and efficiency of this plant considerably increased. Two new blast furnaces have lately been completed, and the present capacity of the concentrator is from 1,000 to 1,200 tons daily. The capacity of the electrolytic plant was increased 300,000 pounds per month in 1898, and is now 4,000,000 pounds monthly, with ability to operate more cheaply than ever. Cost of ore treatment in 1898 is officially stated to have been lower than ever. The Boston & Montana Company is one of the cheapest producers in existence, and its enormous reserves insure future life and prosperity. With the immense mineral resources at its command, it is quite possible that the Boston & Montana may largely increase its copper output.

The company paid in dividends during the year 1898 the sum of $2,400,000, or $16 per share, compared with $1,800,000, or $12 per share, in 1897. Boston & Montana shares sold up to $398 on April 25, 1899, which is equivalent to a market valuation of $59,700,000 for the property. The company paid its regular quarterly dividend of $4 per share, and $11 per share extra on November 20, 1899, thus eclipsing all former Boston & Montana dividends. Total dividends in 1899 were $36 per share, or $5,400,000.

The officials of the Boston & Montana are as follows:

President:

A. S. BIGELOW.

Directors:

A. S. BIGELOW, LEONARD LEWISOHN,
W. J. LADD, JOSEPH S. BIGELOW,
EDWARD S. GREW, JOSEPH G. RAY,
FRANK KLEPETKO, of Montana.

Secretary and Treasurer.

W. J. LADD.

BOSTON & MONTANA COMPANY.

STATEMENT OF RECEIPTS AND EXPENSES OF ALL KINDS, FROM 1887 TO JANUARY 1, 1899.

RECEIPTS.

From Capital Stock, 150,000 shares, $25 a share, full paid	$3,750,000.00
From 1st Mortgage 7 per cent. Bonds, 1st Issue	1,000,000.00
From 1st Mortgage 7 per cent. Bonds, 2d Issue	500,000.00
From General Mortgage 7 per cent. Bonds, 3d Issue	600,000.00
From copper, silver, gold and bluestone sales	47,577,708.13
From treating custom and lease ores	113,743.28
Total receipts	$53,541,451.41

EXPENDITURES.

Expenses at Butte and Great Falls, freight and expenses of handling copper, and all other charges, including interest on bonded debt and sinking fund payments	$32,716,947.94	
Construction at Mines	661,488.53	
Construction at Great Falls	2,038,970.34	
Real Estate	4,482,797.71	
Dividends Nos. 1 to 32 inclusive	9,125,000.00	
Total expenditures		49,025,204.52
Balance of receipts December 31, 1898		$4,516,246.89

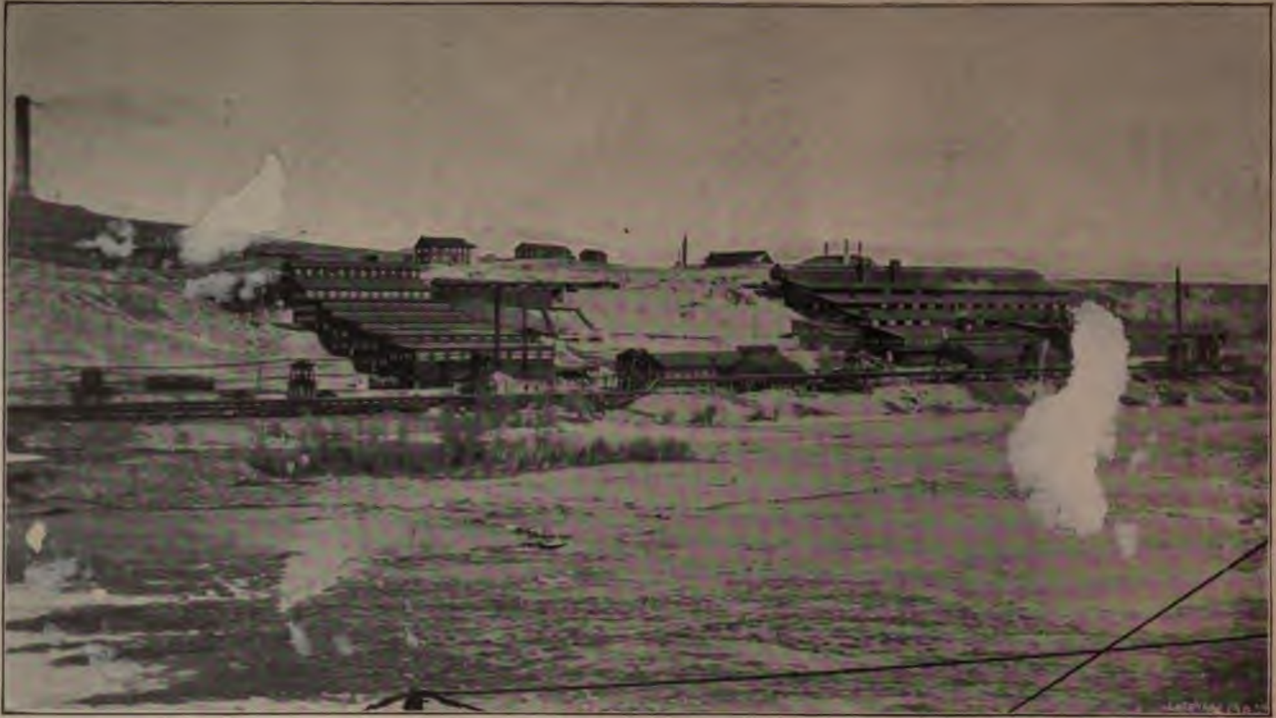
The capital stock is $3,750,000, in 150,000 shares of $25 each, full paid.

Office, 199 Washington street, Boston. The annual meeting of stockholders is held on the last Thursday in April in each year.

S [illegible] OF BOSTON & MONTANA OPERATIONS.

The following comparative statement shows the result of operations by the Boston & Montana Consolidated Copper and Silver Mining Co. for the year ending December 31, 1898, compared with the two previous years, viz.:—(cents omitted.)

	1898.	1897.	1896.
Gross receipts	$7,448,600	$6,949,097	$6,414,307
Mine and smelter expenses	3,354,171	3,274,579	2,887,968
Other expenses	699,785	658,080	646,314
Total expenses	4,053,957	3,932,660	3,534,283
Interest	26,542	33,438	55,673
Sinking funds	50,000	100,000	150,000
Net earnings	3,431,843	2,882,998	2,674,350
Dividends	2,400,000	1,800,000	1,500,000
Property bought	....	200,383	....
Surplus for year	1,031,843	744,074	1,174,350
Total surplus	4,516,246	3,484,403	2,740,328
Ore reserves, tons	2,161,597	1,300,000	950,000
Assets	5,033,920	4,082,737	3,128,971
Liabilities	51[illegible],67[illegible]	598,334	388,642
Surplus	4,5[illegible]6,2[illegible]	3,484,403	2,740,328



SMELTER OF THE BOSTON & MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY, GREAT FALLS, MONTANA.

BOSTON & MONTANA DIVIDENDS.

No.	Transfer Books Closed.	Payable.	Per Share.	No. of Shares.	Amount.
1	July 28, 1888	Aug. 20, 1888	$2.00	100,000	$200,000
2	Oct. 16, 1888	Nov. 20, 1888	2.00	100,000	200,000
3	Feb. 2, 1889	Feb. 20, 1889	2.00	100,000	200,000
4	April 20, 1889	May 20, 1889	1 00	100,000	100 000
5	July 31, 1889	Aug. 20, 1889	1.00	125,000	125,000
6	Oct. 15, 1889	Nov. 20, 1889	1 00	125,000	125 000
7	Jan. 23, 1890	Feb. 20, 1890	1.00	125,000	125,000
8	April 18, 1890	May 20, 1890	1.00	125 000	125,000
9	July 7, 1890	Aug. 1, 1890	1.50	125,000	187,500
10	Oct. 7, 1890	Nov. 1, 1890	1.50	125.000	187.500
11	Jan. 27, 1891	Feb. 20, 1891	1.00	125,000	125,000
12	April 25, 1891	May 20, 1891	1.00	125.000	125,000
13	July 20, 1891	Aug. 20, 1891	1.00	125,000	125,000
14	Oct. 31, 1891	Nov. 20, 1891	1.00	125,000	125.000
15	May 28, 1894	June 28, 1894	1.00	150,000	150.000
16	Oct. 31, 1894	Nov. 27, 1894	1.00	150,000	150,000
17	April 20, 1895	May 20, 1895	2.00	150,000	300,000
18	Oct. 24, 1895	Nov. 20, 1895	5.00	150.000	750.000
19	Jan. 21, 1896	Feb. 20, 1896	2.00	150,000	300,000
20	April 10, 1896	May 20, 1896	2.00	150.000	300.000
21	July 20, 1896	Aug. 20, 1896	3.00	150,000	450,000
22	Oct. 21, 1896	Nov. 20, 1896	3.00	150.000	450.000
23	Jan. 20, 1897	Feb. 20, 1897	3.00	150.000	450,000
24	April 9, 1897	May 20, 1897	3.00	150,000	450 000
25	July 20, 1897	Aug. 20, 1897	3.00	150,000	450,000
26	Oct. 20, 1897	Nov. 20, 1897	3.00	150,000	450.000
27	Jan. 20, 1898	Feb. 19, 1898	3.00	150,000	450.000
28	April 8, 1898	May 20, 1898	3.00	150,000	450,000
29	Aug. 6, 1898	Aug. 25, 1898	5.00	150,000	750 000
30	Oct. 20, 1898	Nov. 21, 1898	5.00	150,000	750,000
31	Jan. 24, 1899	Feb. 20, 1899	5.00	150,000	750.000
32	May 5, 1899	May 29, 1899	6.00	150,000	900,000
33	July 27, 1899	Aug. 21, 1899	10.00	150.000	1.500,000
34	Oct. 27, 1899	Nov. 20, 1899	15.00	150,000	2,250,000

Total dividends to Nov. 20, 1899, . . $14.525,000

Tamarack Mining Company.

The Tamarack Mining Company has a most valuable and extensive area of mineral land at Lake Superior. Five shafts have been sunk on the property, and during a period of about seventeen years since operations began the production of refined copper to December 31, 1898, aggregates about 178,275,665 pounds. The 1,160 acres of land owned by the Tamarack adjoins the Calumet & Hecla on the west, and the yield comes from the Conglomerate and Osceola lodes, which underlie the property. The Conglomerate vein has a dip of 38 degrees, and to penetrate the lode vertical shafts were necessary, the sinking of which occupied years of continuous toil and required the expenditure of large sums of money.

The first shaft sunk struck the vein at a depth of 2,270 feet in June, 1885, after three and a half years of sinking. This shaft is now down to a depth of 3,240 feet, and the rock hoisted from it in 1898 was 71,304 tons. No. 2 shaft is 600 feet north of No. 1, and is down 3,866 feet. From No. 2 shaft 430,262 tons of rock were raised last year, or more than half the mine's output. There is good mining at this shaft, and the lode can be traced for a long distance. No. 3 shaft is the deepest on the property, and goes down vertically a depth of 4,596 feet. The lode is very wide at the opening, viz., from 20 to 25 feet. The rock raised from this shaft last year was 311,417 tons. A large compressor is to go into commission at this shaft this year, designed to supply 80 No. 3 drilling machines. This shaft is 4,200 feet north of No. 2. The amount of drifting done at No. 3 the past year was 2,766.5 feet.

No sinking has been done at No. 4 shaft for several years. This shaft has not been equipped for hoisting rock, owing to the uncertain character of the lode in the early stages of opening. The Superintendent reports that developments the past year, however, indicate that this shaft will require the necessary plant for hoisting and manipulation of rock. This may not be necessary, perhaps, until No. 5 reaches the lode and becomes a producer.

No. 5 shaft reached the 3,000-foot point December 31, 1898. It was sunk 985 feet last year and 1,029 feet in 1897. It is expected to strike the lode at about 4,500 feet from the surface. The sinking of this shaft has cost a great deal of money, but excellent results are expected from it. Further large expenditures will be required before the mammoth No. 5 is ready to go into commission; but if it enters the rich territory anticipated the Tamarack will be able to turn out a product greatly exceeding anything in its past history. Its next neighbor, the Calumet & Hecla, is working on the famous rich Conglomerate, and if the Tamarack at this point finds the lode as well charged with copper as in the case of the former, the new shaft will contribute immensely to the future success of the Tamarack property. The deep mining done at the Tamarack has consumed time and money. Indomitable perseverance has characterized the development of this enterprise from the very first, and an extraordinary amount of brain and skill has marked the progress of the undertaking during its entire career. Expectancy will run high as the shaft approaches the lode, and if the hopes entertained should be realized this triumph of engineering and mining skill will be complete. With the rate of sinking done in the past the lode should be reached about July or August, 1900. Afterwards the plan is to open several levels, and the shaft may not begin to hoist rock before 1901.

A large hoist has been erected at No. 5 shaft, and the machinery and all the appliances will be commensurate with the huge scale on which operations have been planned. A quartet of powerful engines and a gigantic drum capable of holding 6,000 feet of 1½-inch rope, with other machinery and fixtures, all arranged in a fine new building, will be prepared to do the hoisting smoothly and rapidly from the lowest levels. During 1898 Tamarack produced on an average over 2,200 tons of rock daily, or over 67,000 tons per month.

The amount of mineral obtained from the Tamarack last year was 31,127,623 pounds, which, calculated at 67½ per cent., would give 21,011,145 pounds of refined copper. Total cost of rock mined in 1898 was $1.66 per ton, and for the same quantity stamped, $2.01. These figures show a skillful and economical manipulation of the hard conglomerate rock as it passed through the different processes preparatory to smelting. There is also a prospect that these figures may yet be further reduced. Since August, 1898, the Tamarack Company has built five miles of road to handle machinery and pipe, dug the same length of ditch, and laid a 10-inch main with connections to each branch of the boiler plants. At the lake end the pump is a compound fly-wheel type, with capacity of a million gallons per 24 hours.

Interesting experiments have been made at the stamp mill with a view of cheapening the cost of stamping and also of obtaining a larger amount of high grade copper from the same rock. The company has now a new stamp mill of two heads, and the old mill of five heads, and the total rock stamped last year from Tamarack and Tamarack Junior was 736,159 tons, or 352.45 tons per day, for each of the seven heads. Experiments were charged to stamping expenses, but better results are expected this year under improved conditions. The Tamarack has a great extent of reserve ground opened up, so that the known quantities of supply at the end of 1898 were greater than at any previous time.

The Tamarack has a capital stock of $1,500,000 in 60,000 shares of $25 each. Total dividends paid to June 27, 1899, amount to $5,910,000. Sinking and construction expenses at shaft No. 5 last year amounted to $100,363.50. During the past two years there was expended on the new No. 5 shaft $211,424.11. Total construction expenditures during 1897 and 1898 for the two years were $405,214.35, which included the cost of the new stamp mill. Notwithstanding these heavy expenses the company paid in dividends the past two years $840,000.

TAMARACK STATISTICS.

	1898.	1897.	1896.
Rock Hoisted for the Year,	812,983 tons.	726,665 tons.	575,960 tons.
" Stamped "	670,832 "	611,539 "	490,625 "
Mineral Obtained "	31,127,623 lbs.	29,580,380 lbs.	23,628,809 lbs.
Cost of Stamping per Ton,	$22\frac{402}{1000}$ cents.	$26\frac{418}{1000}$ cents.	$29\frac{95}{100}$ cents.
Total Cost per Ton of Rock Mined...............	$1.66	$1.74	$1.94
Total Cost per Ton of Rock Stamped..............	2.01	2 07	2.28

ASSETS AND LIABILITIES.

Assets.

Per Official Report for the Year Ending December 31, 1898.

Cash in bank at Boston, and copper on hand, since sold..................	$334,911 41	
Accounts receivable at Boston, and Hancock & Calumet R.R. Co. bonds..	172,290 09	
Cash and accounts receivable at mine.	125,410 73	
Supplies on hand at mine..........	205,162 96	
Wood and timber lands..............	297,989 44	
Hancock & Calumet R.R. Co. stock....	25,000 00	
Lake Superior Smelting Co. stock....	132,000 00	
Total assets		$1,292,764 63

Liabilities.

Accounts payable at mine...........	$185,735 85	
Accounts payable at Boston..........	213,311 29	
Total liabilities		399,047 14
Balance of assets December 31, 1898..............		$893,717 49

The Directors of the Tamarack submit the following report of the operations of this company for the year ending December 31, 1898:

Gross receipts from sales of copper, interest receipts and other income	$2,381,388 95
The total costs have been	1,862,507 02
Net income for year	$518,881 93
From which have been paid Dividends Nos. 30 and 31	480,000 00
Surplus for the year	$38,881 93
Balance of assets December 31, 1897	854,835 56
Balance of assets December 31, 1898	$893,717 49

The officers of the Tamarack Mining Company are as follows:

President:

A. S. BIGELOW.

Directors:

A. S. BIGELOW,
W. J. LADD,
* CHARLES VAN BRUNT,
LEONARD LEWISOHN,
JOSEPH S. BIGELOW,
EDWARD S. GREW,
WILLIAM E. PARNALL, of Michigan.

Secretary and Treasurer:

W. J. LADD.

Office, No. 199 Washington Street, Boston.

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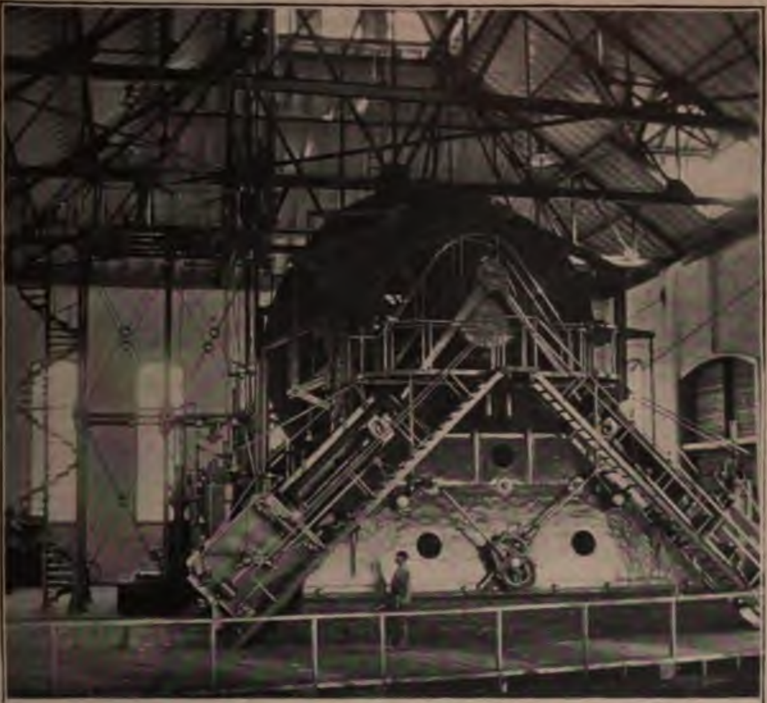
* Deceased.

The annual meeting of stockholders is held on the first Thursday in May in each year.

TAMARACK DIVIDENDS.

No.	Transfer Books Closed.	Payable.	Per Shr.	No. of Shrs.	Amount.
1	March 17, 1888	April 2, 1888	$3	40,000	$120,000
2	June 16, 1888	July 2, 1888	3	40,000	120,000
3	Sept. 15, 1888	Oct. 1, 1888	5	40,000	200,000
4	Dec. 20, 1888	Jan. 1, 1889	5	40,000	200,000
5	March 9, 1889	April 1, 1889	5	40,000	200,000
6	June 12, 1889	July 1, 1889	3	40,000	120,000
7	Sept. 14, 1889	Oct. 1, 1889	3	40,000	120,000
8	Dec. 7, 1889	Jan. 1, 1890	3	40,000	120,000
9	March 10, 1890	April 1, 1890	3	40,000	120,000
10	June 10, 1890	July 1, 1890	3	50,000	150,000
11	Sept. 10, 1890	Oct. 1, 1890	4	50,000	200,000
12	Dec. 24, 1890	Jan. 20, 1891	4	50,000	200,000
13	April 13, 1891	May 1, 1891	4	50,000	200,000
14	July 3, 1891	Aug. 1, 1891	4	50,000	200,000
15	Oct. 6, 1891	Nov. 2, 1891	4	50,000	200.000
16	Feb. 10, 1892	March 10, 1892	4	50,000	200,000
17	May 21, 1892	June 16, 1892	4	50,000	200,000
18	Sept. 17, 1892	Oct 6, 1892	4	50,000	200,000
19	Jan. 4, 1893	Jan. 25, 1893	4	50,000	200,000
20	May 25, 1893	June 20, 1893	4	50,000	200,000
21	Nov. 25, 1893	Dec. 20, 1893	4	50.000	200.000
22	May 21, 1894	June 20. 1894	4	50,000	200.000
23	Dec. 13, 1894	Dec. 31. 1894	4	50.000	200,000
24	May 31. 1895	June 25, 1895	4	50,000	200,000
25	Dec. 5, 1895	Dec. 31, 1895	4	50.000	200,000
26	June 6, 1896	June 30. 1896	3	60,000	180,000
27	Dec. 8, 1896	Dec. 31. 1896	3	60,000	180,000
28	June 7, 1897	June 30, 1897	3	60,000	180.000
29	Dec. 1. 1897	Dec. 31, 1897	3	60.000	180,000
30	June 2, 1898	June 30. 1898	4	60,000	240,000
31	Nov. 30, 1898	Dec. 28, 1898	4	60,000	240,000
32	May 31, 1899	June 27, 1899	4	60,000	240,000
33	Nov. 29, 1899	Dec. 28, 1899	6	60,000	360,000
	Total				$6,270,000



1. NO. 5 HOIST AT TAMARACK MINE.

2. TAMARACK STAMP MILL.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

The Tamarack is reported to have recently struck the richest copper found for years, if not the richest ever found in the mine, in the twelfth and thirteenth levels, south of No. 3 North Tamarack shaft. At this shaft following the lode to the west there will be a stretch of ground two miles long, so the great possibilities of the Tamarack may be appreciated.

The directors of the Tamarack Mining Company declared a semi-annual dividend of $6 per share on November 23, 1899. This makes $10 per share declared in 1899. Dividend is payable December 28, 1899.

The Quincy Mining Company

The Quincy Mining Company ranks third among Lake Superior companies as a producer of copper, and second among the dividend payers of that district. The property has been actively operated for half a century, and is at present in a state of great prosperity. During the year 1898 the company produced 16,354,061 pounds of refined copper which realized the gross sum of $1,986,116.81. Total expenses, including construction, last year, amounted to $1,336,538.23, leaving as mining profit $649,578.58. The property embraces 2,900 acres, or more than four times the territory with which the organization started. The management has been a very practical and conservative one, and has succeeded in developing a mine which has produced during its existence 232,667,200 pounds of refined copper to December 31, 1898. Its dividend disbursements to August 15, 1899, aggregate $11,070,000, and of this amount $5,900,000 has been paid since January 1, 1890. The first Quincy dividend was paid July 31, 1862, and was $3 per share on 20,000 shares, or $60,000. Since 1890 the company has doubled its output of copper, and from employing on an average 484 men in that year, the number was raised to 1,222 in 1898.

In addition to the purchase of the Pewabic Mine in 1891, the company bought 640 acres of mineral land from the St. Mary's Canal Mineral Land Company, in the year 1893. More territory was secured in 1897 by the acquisition of the Mesnard and Pontiac properties, which were secured for $38,560.60. The company increased its capital stock on

June 5, 1889, from 40,000 to 50,000 shares of the par value of $25 each, and on April 16, 1897, it was further increased to 100,000 shares at the par value of $25 each. The earnings for the year 1898 were $668,103.86, and balance of assets on January 1, 1899, stood at $1,229,275.15.

The Quincy started a new shaft in December, 1897, known as No. 7, and is about 876 feet south of No. 4 shaft. It was commenced in the lower levels by extending the main drifts and driving crosscuts where necessary to line of shaft, the work being carried on by sinking and rising simultaneously. This new shaft will be curved to conform to the lode, which flattens at this point, and will be in the form of catenary. It will have a depth when completed of from 4,000 to 4,300 feet. It is nearly two-thirds sunk, and will facilitate the handling of rock at this part of the mine. The total opening at this new shaft amounted to a little over 2,560 feet last year, and the opening has been completed about 4,000 feet, which is a record of remarkable progress in shaft building. Like the other shafts of the Quincy, the new No. 7 is a two-compartment one, with dimensions of about 8 x 18½, and equipped like the others, with special regard for the safety of the miners using it. It will probably be about June, 1900, before the equipment is in place to begin rock raising at the new shaft. There are three other shafts in operation, viz., No. 2, No. 4 and No. 6, and from these the product is derived. No. 2 shaft is 4,440 feet deep, and has been sunk to the fifty-third level. Drifting from this shaft last year showed the vein in openings made to be mostly of fair average and of good quality. No. 4 shaft was sunk from 86 feet below the forty-ninth level to the fifty-first level, and is down 4,230 feet. This shaft is 600 feet south of No. 2 shaft, and the southernmost parts of openings made last year —especially in the vicinity of No. 7 shaft—have improved very much of late, exposing long stretches of good stoping ground. No. 6 shaft is down to the fifty-first level, or over 4,200 feet. Some of the drifts from this shaft last year went through long stretches of low-grade vein, but rich blocks of ground were also encountered here and there. It is characteristic of all amygdaloids to meet with alternate stretches of lean and rich ore, and the Quincy is no exception to this peculiar feature. The average quality and character of the lode throughout the mine from north to south, however, is reported to be about the same as it has been for many years.

The Quincy has a stamp mill, where five heads of stamps are operated, fitted with 20-inch cylinders, and having a capacity of from 1,800 to 2,000 tons of rock per 24 hours. The company is erecting a new stamp mill about 630 feet north of the present mill. The building will be 132 feet by 216 feet, of steel, to be fitted with three heads of stamps, which number may be increased. The company built a new smelting works at Hancock last year, where they began the smelting of copper on December 1, 1898. The entire plant throughout is of the finest in every particular, and will result in a considerable saving annually on the Quincy's output. About 4,800,000 pounds of the Quincy product is treated electrolytically per annum, for which they receive the equivalent of the silver contents from the refiners, in addition to the price of the copper, which is settled for at the average price of copper for the month.

The following compilation is from official figures for 1898 and previous years (cents omitted):

	Year 1898.	Year 1897.	Year 1896.	Year 1895.	Year 1894.
Mineral, lbs....	20,056,942	20,630,625	20,370,725	19,732,970	18,864,754
Refined Copper, lbs..	16 354,061	16,924,618	16,863,477	16,304,721	15,484,014
Gross Income..	$1,986,116	$1,872,213	$1,842,117	$1,657,701	$1,467,190
Sales of Silver..	....	18,024	22,080	3,745	3,081
Expenses at Mine.... ...	887,886	890,732	893,696	763,018	691,514
Construction...	221,277	18,466	....	....	1,813
Smelting, etc...	191,385	*260,271	214,872	206,353	186,888
Mining Profit..	649,578	720,767	755,628	692,074	590,055
Interest Realized.........	12,594	8,267	12,959	8,358	4,647
Received from Real Estate...	5,931	2,244	1,475	57	‡2,116
Net Income....	668,103	731,278	770,063	700.489	592 586
Dividends Paid.	650,000	800,000	1,000,000	600,000	400,000
Purchase of Land........	....	‡38,560	....	....	....
Received from Trust Acct...	....	390,888	150,000	....	....
Surplus........	18,103	†107,282	†229,937	100,489	192,586
Assets Dec. 31..	1,229,275	1,211,171	927,564	1,007,500	907,011

* Including $45,801 taxes in Michigan.
‡ Paid out.
† Deficiency.

PRODUCTION, ETC., OF THE QUINCY MINING COMPANY SINCE 1890.

We have made the following compilation and comparison, viz. (cents omitted):

Year.	Mineral, Lbs.	Refined Copper, Lbs.	Mining Profit.	Dividends.	Balance of Assets Dec. 31.
1890	10,002,850	8,064,273	$581,080	$400,000	$742,045
1891	12,827,075	10,542,519	398,203	450,000	707,015
1892	13,621,815	11,103,926	279,633	300,000	653,210
1893	17,708,035	14,898,477	493,399	350,000	714,424
1894	18,864,754	15,484,014	590,055	400,000	907,011
1895	19,732,970	16,304,721	692,074	600,000	1,007,500
1896	20,370,725	16,863,477	755,628	1,000,000	927,564
1897	20,630,625	16,924,618	720,767	800,000	1,211,171
1898	20,056,942	16,354,061	649,578	650,000	1,229,275
Total 9 Years.	153,815,791	126,040,066	$5,155,417	$4,950,000	

QUINCY MINING COMPANY.

OFFICIAL STATEMENT

OF ASSETS AND LIABILITIES, EXCLUSIVE OF REAL ESTATE, MINE PLANT AND SUPPLIES IN USE, JANUARY 1, 1899.

ASSETS.

Cash and copper		$1,138,732 89
Accounts receivable		95,882 58
		$1,234,615 47

LIABILITIES.

Drafts unpaid	$ 8,118 22	
Dividends unpaid	3,052 50	
Accounts payable in New York	28,500 00	
Accounts payable at mine	113,563 56	
		153,234 28
		$1,081,381 19
Add at mine:		
Supplies per inventory on file	$135,352 05	
Teams, etc	4,781 00	
Accounts receivable	7,760 91	
		147,893 96
		$1,229,275 15

General Summary of Receipts and Expenditures of the Quincy Mining Company from its Organization to December 31, 1898.

EXPENDITURES.		RECEIPTS.	
For Expenditure on Location previous to 1856	$42,097 98	From Capital Stock paid in	$200,000 00
" " on Quincy vein, 1858, not now worked	55,000 00	" " " (Script)	1,250,000 00
" Openings and Explorations on 3,800 feet, east or Pewabic vein, extending to Portage Lake, preparatory to future work	11,500 00	" Proceeds of Copper and Silver (232,667,200 lbs. Copper)	34,207,428 29
" Real estate and permanent improvements on same, including dwelling houses, stamp mill, machinery, steam engines, railroad, dock, warehouse and other buildings and roads	3,206,705 86	" Interest	257,710 73
Mining and surface labor, expenses of smelting and marketing copper, and all incidental expenses	21,407,916 41	" Profit on sale P. L. & R. Improvement Company stock, and other investments	79,637 16
Balance carried down	11,349,275 15	" Sales, Real Estate, Hancock, Mich	77,719 22
	$36,072,495 40		$36,072,495 40
		Balance brought down, being receipts over expenditures	$11,349,275 15
		Deduct dividends declared, Nos. 1 to 60 inclusive	10,120,000 00
		Makes balance	$1,229,275 15

The officers of the Quincy Mining Company are the following:

T. HENRY MASON, *President.*
CHARLES J. DEVEREAUX, *Vice-President.*

Directors:

T. HENRY MASON,
CHARLES J. DEVEREAUX,
ISAAC H. MESERVE,
GEORGE T. BLISS,
CLEVELAND H. DODGE
WILLIAM R. TODD,
SAMUEL B. HARRIS, of Michigan.

WILLIAM R. TODD, *Sec'y and Treas.*
W. A. O. PAUL, *Ass't Sec'y and Treas.*

Office: No. 45 Broadway, New York.
Transfer Agent: Old Colony Trust Company, Boston.

Mr. Thomas F. Mason, who for more than forty years was President of the Quincy Mining Company, died June 2, 1899, at the advanced age of 83 years. Mr. Mason was actively identified with the Quincy Company during the long period of his Presidency, and was regarded as the ruling spirit in guiding its career and developing its resources, being at the same time ably assisted by the gentlemen associated with him in the management of this most successful property.

Production of the Quincy Mining Company in mineral of about 80 per cent. copper for the first 9 months of 1899, as follows:

1899.	Mineral lbs.
January	1,621,225
February	1,466,350
March	1,552,205
April	1,626,735
May	1,516,125
June	1,483,545
July	1,375,610
August	1,499,085
September	1,395,340
October	1,437,060
Total 9 months	14,973,280

QUINCY SMELTING WORKS, HANCOCK, MICHIGAN.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

The Osceola Consolidated Mining Company.

The original Osceola was organized in 1873. and on October 26, 1897, the Kearsarge and Tamarack Junior were absorbed by the parent company and a consolidation of the three properties effected. As now constituted the present company is one of the most promising at Lake Superior and has a large area of mineral land which it is proposed to develop in a thorough and vigorous manner. With a territory of 2,000 acres traversed by the Osceola and Kearsarge amygdaloids, and the Calumet conglomerate lodes, the copper deposits are sufficiently extensive and important to maintain an increasingly large output for many years to come. The Osceola lode is bunchy by turns, then lean, and again well charged with copper; but the permanency of the lode is an accepted fact, as the Osceola vein was cut into at a great depth on another property and found heavily charged with copper.

At the Osceola Branch there are six shafts, and during the past year sinking was continued at No. 4, No. 5 and No 6. The new shaft, No. 6, after reaching the thirty-third level, went into commission in April, 1898. Twenty drifts have been run north and south from this shaft, and until the new stamping facilities are ready it was thought best not to hoist much more rock from this shaft than the drifts furnished. The new shaft is finely equipped for fulfilling its purpose, and has a hoisting plant which does the work perfectly. During the past two years $169,577.46 was spent for construction, etc., and in addition thereto $29,140.67 was spent on the new stamp mill. The latter sum was raised by a sale of treasury stock. A crosscut was driven at the thirty-first level, south of No. 5 shaft, and drifted 567.5 feet for the purpose of testing the Calumet conglomerate. The lode was reached last July and found to be more sandstone than conglomerate. It was therefore decided to do no more work at that point. The Osceola, however, can follow the amygdaloid lode for a distance of a mile or more upon its dip, and is sure of a continuous product from this vein.

The Kearsarge Branch has two shafts, which are located 1,425 feet apart. No. 2 shaft is down to the twenty-second level and was sunk 91.6 feet during 1898. The Kearsarge is working upon the same lode as the Wolverine, and there are connections established between several of the levels of these two properties, whereby a better system of ventilation and means of exit is furnished to both mines. The sinking of a new shaft has been started near the recently acquired Iroquois territory. There is nearly a mile of unexplored territory north of the new shaft, and the intention is to sink to a depth of 2,000 feet and more for the purpose of proving the value of the north end of the mine. A new compressor has been provided at this part of the mine, and preparations are under way to increase output from the Kearsarge Branch of these consolidated properties.

Tamarack Junior Branch obtains its copper from the Calumet conglomerate vein. Two vertical shafts have been sunk, and the openings are promising. The Tamarack Junior comprises three forties in Section 11, and developments are expected to show up well. The lode dips at an angle of 37½ degrees, and extends for 2,400 feet on this property.

The company has erected a new stamp mill containing three 20x24-inch cylinder heads. The mill machinery has recently been put in place and is now ready to begin stamping. The new building is of steel 215x135 feet, and improved methods of operation are to be adopted in the new mill. At the new stamp mill a tunnel 1,275 feet in length and 8x8 feet in size has been drifted through the sandstone that will in future supply the entire pumping system with water. A combination stone and steel pump house has been erected. The foundation walls are of stone, and 24 feet deep, on which are added 16-foot posts of structural steel. The new building has a floor space of 88x45 feet and is now fitted with the pumping machinery. The pump has a capacity of 40,000,000 gallons every 24 hours and is to supply water to all the mills. The old mill of the company, containing six heads of stamps, has also received substantial repairs. The new and the old mills together will be able to treat in the neighborhood of 3,500 tons of rock per diem of 24 hours when operated up to full capacity. The new improvements have been expensive items, but when these are all finished the Osceola should be able to show magnificent results.

The company has a capital stock of $2,500,000 in 100,000 shares of $25 each. There is remaining in the treasury

7,000 shares of stock, which are not included in the statement of assets. The output of mineral for the calendar year 1898 was 15,848,928 pounds from all branches, as compared with 13,857,373 pounds during the previous year. Cost of stamping in 1898 was 28.94 cents per ton, against 25.574 cents in 1897. The principal cause of the increase in cost is attributed to a loss in the steaming quality of the coal used for nearly six months, the same being coal saved from the fire at the Dollar Bay coal shed. Total dividends paid since November 15, 1878, the date upon which the first Osceola dividend was paid, to December 15, 1899, aggregate $3,098,750. The forty-eighth dividend was $3 per share on 93,000 shares, which was paid on December 15, 1899. The smallest dividend ever paid by the Osceola was 25 cents per share, on 50,000 shares, on October 1, 1884, and the largest dividends paid were those of June 15 and December 15, 1899, when $3 each per share were disbursed. A dividend of $3 per share was declared November 13, 1899, payable December 15, 1899. This makes $6 per share paid in 1899, or $558,000. The new stamp mill went into operation in November, 1899.

ASSETS AND LIABILITIES.

ASSETS.

Per official report for year ending December 31, 1898.

Cash in bank at Boston and copper on hand, since sold	$415,112.14	
Accounts receivable at Boston	82,802.37	
Cash and accounts receivable at mine	34,009.09	
Supplies on hand at mine	120,055.55	
Wood and timber lands	49,340.61	
Hancock & Calumet R. R. Co. stock	75,000.00	
Lake Superior Smelting Co. stock	60,000.00	
Total assets		$836,319.76

LIABILITIES.

Accounts payable at mine	$116,092.81	
Accounts payable at Boston	64,893.55	
Total liabilities		$180,986.36
Balance of assets December 31, 1898		$655,333.40

The Directors of the Osceola submit the following report of the operations for the year ending December 31, 1898:

Gross receipts from sales of copper, interest receipts and other income		$1,549,820.12
The total costs have been		1,178,028.22
Net income for year		$ 371,791.90
From which have been paid dividends Nos. 45 and 46		277,250.00
Surplus for the year		$ 94,541.90
Received from sale of treasury stock	$114,109.85	
From which has been paid:		
New stamp mill construction, etc.	29,140.67	
Balance yet available for this construction account		84,969.18
Total surplus for the year		$ 179,511.08
Balance of assets December 31, 1897		475,822.32
Balance of assets December 31, 1898		$ 655,333.40

The officers of the Osceola Company are as follows:

President:

A. S. BIGELOW.

Directors:

A. S. BIGELOW, EDWARD S. GREW,
W. J. LADD, LEONARD LEWISOHN,
J. HENRY BROOKS, * CHARLES VAN BRUNT,
WILLIAM E. PARNALL, of Michigan.

Secretary and Treasurer:

W. J. LADD.

Office, 199 Washington Street, Boston.

The annual meeting of stockholders is held on the second Thursday in March in each year.

* Deceased.

OSCEOLA DIVIDENDS.

No.	Transfer Books Closed.	Payable.	Per Shr.	No. of Shrs.	Amount.
1	Oct. 12, 1878	Nov. 15, 1878	$1.00	40,000	$40,000
2	July 22, 1879	Aug. 15, 1879	1.50	40,000	60,000
3	Jan. 26, 1880	Feb. 14, 1880	1.50	40,000	60,000
4	April 22, 1880	May 15, 1880	1.50	50,000	75.000
5	Aug. 10, 1880	Sept. 10 1880	1.50	50,000	75.000
6	Dec. 6, 1880	Jan. 1, 1881	1.50	50,000	75,000
7	April 1, 1881	April 30, 1881	1.50	50,000	75,000
8	Sept. 2, 1881	Oct. 1, 1881	1.50	50,000	75,000
9	Dec. 17, 1881	Jan. 2, 1882	1.00	50,000	50,000
10	March 14, 1882	April 1, 1882	1.00	50,000	50.000
11	June 10, 1882	July 1, 1882	1.00	50,000	50,000
12	Sept. 9, 1882	Oct. 2, 1882	1.00	50,000	50,000
13	Dec. 9, 1882	Jan. 1, 1883	1.00	50,000	50,000
14	March 10, 1883	April 2, 1883	1.00	50.000	50.000
15	June 9, 1883	July 2, 1883	.50	50,000	25,000
16	Sept. 21, 1883	Oct. 1, 1883	.50	50,000	25,000
17	Dec. 15, 1883	Jan. 1, 1884	.50	50,000	25,000
18	March 15, 1884	April 1, 1884	.50	50,000	25,000
19	June 14, 1884	July 1, 1884	.50	50,000	25,000
20	Sept. 20, 1884	Oct. 1, 1884	.25	50.000	12,500
21	Jan. 15, 1887	Feb. 15, 1887	1.00	50,000	50,000
22	Dec. 31, 1887	Jan. 16, 1888	1.00	50,000	50,000
23	May 31, 1888	June 15, 1888	1.00	50,000	50,000
24	Aug. 25, 1888	Sept. 15, 1888	1.00	50,000	50,000
25	Feb. 9, 1889	March 1, 1889	1.00	50,000	50.000
26	Jan. 31, 1890	March 1, 1890	1.00	50,000	50,000
27	May 7, 1890	June 2, 1890	1.00	50,000	50,000
28	Aug. 7, 1890	Sept. 2, 1890	1.00	50,000	50,000
29	Nov. 10, 1890	Dec. 1, 1890	1.50	50,000	75,000
30	March 14, 1891	April 8, 1891	1.00	50,000	50,000
31	June 22, 1891	July 8, 1891	1.00	50,000	50,000
32	Sept. 24, 1891	Oct. 15, 1891	1.00	50,000	50,000
33	May 7, 1892	May 26, 1892	1.00	50,000	50,000
34	Aug. 15, 1892	Sept. 1, 1892	1.00	50,000	50,000
35	Nov 18, 1892	Dec. 20, 1892	1.00	50,000	50,000
36	April 14, 1893	May 5, 1893	1.00	50,000	50,000
37	Dec. 9, 1893	Dec. 30, 1893	1.00	50,000	50,000
38	Dec. 28, 1894	Jan. 15, 1895	1.00	50.000	50,000
39	June 26, 1895	July 25, 1895	1.00	50,000	50,000
40	Dec. 14, 1895	Jan. 15, 1896	1.50	50,000	75,000
41	June 29, 1896	July 25, 1896	1.00	50,000	50,000
42	Jan. 7, 1897	Feb. 1, 1897	1.00	50,000	50,000
43	June 28, 1897	July 26, 1897	1.00	50,000	50,000
44	Dec. 4, 1897	Dec. 31, 1897	1.00	91,000	91,000
45	June 4, 1898	June 30, 1898	1.00	91,250	91,250
46	Nov. 18, 1898	Dec. 20, 1898	2.00	93,000	186.000
47	May 18, 1899	June 15, 1899	3.00	93,000	279.000
48	Nov. 20, 1899	Dec. 15, 1899	3.00	93,000	279,000

Total dividends $3,098,750

STANLEY GIFFORD.

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The Montana Ore Purchasing Company.

The Montana Ore Purchasing Company was organized under the laws of the State of Montana March 11. 1893, as a mining, ore purchasing and smelting concern. The company had existed for some two years previous to its formal incorporation as a co-partnership consisting of Mr. F. Aug. Heinze, Mr. Stanley Gifford and others. The operations of this co-partnership had been mainly that of leasing mines, concentrating the product obtained therefrom at what was known as the old Liquidator concentrator, located at Meaderville, near Butte, and either selling the concentrates to local smelters or shipping them to outside works. A large quantity of high grade concentrates was shipped to New York City.

The copper produced in this form during the last six months of 1891 and the year 1892 amounted to about six million pounds, which was obtained mostly from leasing operations on the Ramsdell, Parrot and Estella mines. There was also a large amount of silver contained in the copper produced.

Upon the incorporation of the company, the Liquidator concentrator was purchased and its daily capacity increased from 100 tons to 600 tons. Great economies were effected in the cost of concentrating by the installation of improved machinery for automatic treatment. In the fall of 1893 the erection of the smelting plant was begun, and from this plant the first copper matte was produced on January 3, 1894. This product assayed about 55 per cent. copper, and was produced until 1895, when a converting plant was installed. Since this time the product of the company has been pig copper assaying 99 per cent., and carrying large quantities of silver and gold.

The company purchased the Glengarry No. 2 Mine in 1893, which mine was located in a hitherto unproductive section of the Butte district. Exceedingly large ore bodies were developed in this property. They also leased the Rarus and part of the Johnstown mines, which up to that time had not been proven of any value, although a shaft had been sunk in the Rarus Mine to a depth of 650 feet. Very large ore bodies were developed in these properties, and they were later purchased by the company at a cost of $400,000. The original shaft on the Rarus was sunk to the 800-foot level and made a double compartment throughout. A second shaft was also sunk to a depth of 1,000 feet, with three compartments, and both equipped with adequate hoisting works. The Rarus and Johnstown properties contain the easterly continuation of both the Mountain View south vein and the main Anaconda-St. Lawrence vein, and are considered to be among the most valuable mines in the Butte district.

The ore produced is delivered to the works of the company by rail, and is treated therein more economically than in any smelting plant in Montana. The present smelting works treat from 500 to 600 tons of concentrates and first class ores daily, additional machinery having been installed

SMELTER OF THE MONTANA ORE PURCHASING COMPANY AT BUTTE, MONTANA.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

during the last six months, whereby the former capacity of the plant has been doubled.

The company owns large interests in mining properties in the Butte district and elsewhere. Among the same might be mentioned the Mountain Chief, Snohomish, Tramway, Corra, Rock Island, Parnell, Schwizer, Fairmount, L. E. R., Nipper, Minnie Healey, Homestake and others.

The Montana Ore Purchasing Company has since its inception produced over one hundred million pounds of copper, two and a half million ounces of silver and about one hundred and twenty-five thousand ounces of gold, and is now producing at the rate of 24,000,000 pounds of copper annually.

The capital stock of the Montana Ore Purchasing Company is $2,500,000, divided into 100,000 shares of a par value of $25. Of this amount 80,000 shares have been issued, and 20,000 shares remain in the treasury. The bonded indebtedness of the company amounts to $1,000,000.

The total dividends paid by the company since January 1, 1895, to November 1, 1899, amount to $1,356,000, of which $560,000 has been paid this year.

The officers of the company are:

F. AUG. HEINZE, *President and General Manager.*
JOHN MACGINNISS, *Vice-President.*
ARTHUR P. HEINZE, *Secretary.*
STANLEY GIFFORD, *Treasurer.*

Office, 100 Broadway, New York.

United States Copper Production.

BY MONTHS.

The following is the United States copper production, as per the official returns of the Copper Producers Association, since July, 1892, the date when these returns began. The figures include the output of reporting mines, and estimated outside sources, in tons of 2,240 pounds fine copper:

1892	Reporting Mines.	Outside Sources. (Estimated.)	Total, Long Tons.
July	9,294	924	10,218
August	10,807	870	11,677
September	9,710	994	10,704
October	9,668	1,289	10,957
November	9,888	1,036	10,924
December	9,872	1,174	11,046
Total 6 months	59,239	6,287	65,526

1893	Reporting Mines.	Outside Sources. (Estimated.)	Total, Long Tons.
January	9,187	989	10,176
February	8,213	1,042	9,245
March	9,065	1,321	10,386
April	11,775	1,042	12,817
May	12,706	1,042	13,748
June	11,524	1,042	12,566
July	11,049	1,042	12,091
August	11,745	1,042	12,787
September	11,750	1,042	12,792
October	11,503	1,042	12,545
November	10,705	1,042	11,477
December	10,538	1,042	11,580
Total 12 months	129,760	12,730	142,480

UNITED STATES COPPER PRODUCTION.—CONTINUED.

1894	Reporting Mines.	Outside Sources. (Estimated.)	Total. Long Tons.
January	10,832	1,340	12,172
February	10,245	1,340	11,585
March	13,759	1,340	15,099
April	12,475	1,340	13,815
May	12,668	1,340	14,008
June	13,972	1,340	15,312
July	12,639	1,340	13,979
August	11,815	1,500	13,315
September	11,257	1,500	12,757
October	12,692	1,500	14,192
November	11,044	1,600	12,644
December	9,145	1,600	10,745
Total 12 months	142,543	17,080	159,623

1895	Reporting Mines.	Outside Sources. (Estimated.)	Total. Long Tons.
January	10,094	1,600	11,694
February	11,120	1,600	12,720
March	12,553	1,600	14,153
April	11,944	1,600	13,544
May	13,260	1,600	14,860
June	11,641	1,100	12,741
July	12,524	1,100	13,624
August	14,290	1,100	15,390
September	14,251	1,100	15,351
October	15,045	1,100	16,145
November	15,330	1,100	16,430
December	13,445	1,100	14,545
Total 12 months	155,497	15,700	171,197

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UNITED STATES COPPER PRODUCTION.—CONTINUED.

1896	Reporting Mines.	Outside Sources. (Estimated.)	Total, Long Tons.
January	14,872	1,200	16,072
February	16,316	1,200	17,516
March	16,722	1,200	17,922
April	15,912	1,200	17,112
May	15,533	1,200	16,733
June	14,825	1,200	16,025
July	15,395	1,200	16,595
August	15,600	1,200	16,800
September	15,777	1,200	16,977
October	16,958	1,200	18,158
November	15,165	1,200	16,365
December	16,419	1,200	17,619
Total 12 months	189,474	14,400	203,894

1897	Reporting Mines.	Outside Sources. (Estimated.)	Total, Long Tons.
January	16,937	700	17,637
February	16,119	700	16,819
March	17,583	700	18,283
April	16,554	900	17,454
May	17,805	1,000	18,805
June	18,653	1,000	19,653
July	14,244	1,100	15,344
August	16,309	1,100	17,409
September	16,343	1,100	17,443
October	16,341	1,200	17,541
November	16,227	1,200	17,427
December	21,091	1,200	22,291
Total 12 months	204,206	11,900	216,106

UNITED STATES COPPER PRODUCTION.—CONTINUED.

1898	Reporting Mines.	Outside Sources. (Estimated.)	Total, Long Tons.
January	16,544	1,200	17,744
February	16,072	1,250	17,322
March	19,131	1,250	20,381
April	21,609	1,300	22,909
May	21,391	1,350	22,741
June	17,940	1,450	19,390
July	14,452	1,600	16,052
August	17,908	1,600	19,508
September	17,064	1,700	18,764
October	19,429	1,700	21,129
November	18,050	1,800	19,850
December	16,632	1,850	18,482
Total 12 months	216,222	18,050	234,272

1899	Reporting Mines.	Outside Sources. (Estimated.)	Total, Long Tons
January	16,774	1,850	18,624
February	17,899	2,000	19,899
March	19,918	2,000	21,918
April	17,854	2,100	19,954
May	19,832	2,250	22,082
June	19,710	2,300	22,010
July	18,533	2,800	21,333
August	19,886	2,800	22,686
September	19,515	3,200	22,715
October	20,680	3,300	23,980
November	19.817	3,400	23 217
Total 11 months			238,418

Atlantic Mining Company.

This Lake Superior mine has been regularly operated since 1872, and notwithstanding the low percentage of copper found in the rock, the property has been most successfully managed, and after paying in the aggregate dividends amounting to $780,000 it wound up last year's operations with a net surplus of $105,098.87. The present organization expended in the purchase of the "South Pewabic" and "Adams" mines, buildings, railroad, stamps, etc., according to the valuation at time of consolidation, the sum of $659,642.11, and for other real estate since purchased $57,449.66. The company's territory embraces 1,280 acres of mineral land. A tract of 40 acres on the northeast of the mine was bought in 1897 for $7,000 cash, and the conveyance of a tract of wood land.

The production of refined copper last year was 4,377,399 pounds, as compared with 5,109,663 pounds in 1897. The decrease in output was owing to the fact that the percentage of copper in rock last year was the lowest on record, viz., 0.59 per cent. to ton of rock treated, and also on account of a fire which broke out in November, resulting in the loss of about a month's product. The management figure the loss in cutput arising from these two causes last year to be about 784,000 pounds of copper. The yield of rock in 1898 gave only 11.8 pounds of copper, against 12.96 pounds the year previous. The lowest previous yield was in 1891, when it was 12.2 pounds of copper to ton of rock treated. It rose to 14.6 pounds in 1895, but gradually declined

STAMP MILL OF ATLANTIC MINING COMPANY, LAKE SUPERIOR, MICH.

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TILDEN FOUNDATIONS.

again until the low record of last year was made. It is gratifying to note, however, that the condition of the mine is much improved, and a recent treatment of rock showed a much higher percentage of mineral. In August last the mineral gave 1 per cent or better than 0.75 refined copper.

The sinking of a new shaft on recently acquired 40-acre tract has been begun, and is down to a depth of over 300 feet from the surface. Levels have been driven north and south from this shaft an average distance of 71 feet from the shaft, where the ground has been found of about the same productive character as at the other workings in the mine. This new opening is known as Shaft "A." Considerable increase in the Atlantic's production is expected to be derived from this new shaft. A new stone engine house was erected at this shaft last year 42 x 50 feet, with steel roof, stone boiler house, shaft and rock house, besides engines and other necessary equipment.

Exploration work in search of the "Baltic" lode was continued without finding the same. A shaft was sunk in the southeast portion of section 16 to a depth of 55 feet and a crosscut driven westerly. The search was pursued up to the boundary line of the Atlantic and then taken up by the Baltic Mining Company, but the position of the lode remained undetermined.

There are six shafts on the Atlantic property, and they were all extended during the past year. The total amount of drifting done during 1898 was 5,895 feet.

The stamp mill is nine miles from the mine and is connected therewith by a railroad of the standard gauge pattern, which the company owns and operates. The new mill is a splendid one, and has six heads of stamps, and iron foundations were placed under three stamp heads the past year. The equipment is now complete.

The following summary of operations will be found interesting (cents omitted):

	1898.	1897.	1896.	1895.
Mineral, lbs...........	5,926,450	6,766,960	6,449,600	6,239,000
Refined copper, lbs....	4,377,399	5,109,663	4,894,228	4,832,497
Gross income..........	$518,219	$574,783	$531,160	$509,012
Expenses at mine......	440,373	401,806	394,378	336,131
Smelting, etc..........	59,479	67,162	64,830	62,282
Mining profit..........	18,366	105,814	71,951	110,599
Cr. real estate.........	....	657	3,185	2,687
Net income............	....	106,471	75,136	113,286
Construction, etc.	69,630	49,394	46,726	118,105
Surplus for year	*51,263	57,077	28,410	*4,819
Dividends	....	40,000	40,000	....
Assets December 31....	105,098	196,362	179,285	150,874
erage price received for Copper................	$11\frac{88}{100}$ cts.	$11\frac{88}{100}$ cts.	$10\frac{84}{100}$ cts.	$10\frac{52}{100}$ cts.
Per cent. Copper in Mineral	$73\frac{86}{100}$	$75\frac{51}{100}$	$75\frac{88}{100}$	$77\frac{46}{100}$

* Excess of expenditures over receipts.

The Atlantic Mining Company paid its first dividend on February 11, 1878. Total dividends number sixteen, the last being paid on February 5, 1898. The company has a capital stock of $1,000,000 in 40,000 shares of $25 each, upon which $24.50 has been paid in.

Production of the Atlantic Mining Company for the first nine months of 1899 was 3,377,403 pounds of refined copper. The Atlantic mine was reported last November to be making 18 pounds of mineral to the ton, netting 13 pounds of ingot or 65-100 per cent.

ASSETS AND LIABILITIES OF ATLANTIC MINING COMPANY, DECEMBER 31, 1898.

Assets.

Cash		$8,116 49
Copper bills and copper on hand, sold		57,365 58
Coal, wood and supplies at mine		60,316 85
Merchandise in store at mine		54,924 98
Accounts receivable		4,507 76
		$185,231 66

Liabilities.

Indebtedness at mine	$32,979 00	
Accounts payable	7,153 79	
Loans	40,000 00	
		$80,132 79
Balance of assets		$105,098 87

Officers of Atlantic Mining Company are the following:

President:
JOSEPH E. GAY.

Directors:

JOSEPH E. GAY,
JOHN STANTON,
J. R. STANTON,
ISAAC B. CRANE,
J. W. HARDLEY,
WM. C. STUART,
SAMUEL L. SMITH, of Michigan.

Secretary and Treasurer:
JOHN STANTON.

Office, 11 and 13 William Street, New York.

SUMMARY OF RESULTS.

ATLANTIC MINING COMPANY.

	1898.	1897.	1896.
Ground broken in openings and stopes, fathoms	20,438	24,429	20,629
Rock stamped, tons	370,767	394,296	371,128
Product of mineral, pounds	5,926,450	6,766,960	6,449,600
Product of refined copper, pounds	4,377,899	5,109.663	4,894,228
Yield of refined copper per cubic fathom, pounds	214	209	237
Yield of rock treated, per cent	0.59	0.648	0.66
Gross value of product, per ton rock treated	$1.40	$1.46	$1.43
Cost per ton of mining, etc	.8911	.7343	.7643
Transportation to mill, per ton	.0555	.0454	.0496
Stamping and separating, per ton	.2411	.2394	.2487
Working expenses at mine, per ton	$1.1877	$1.0191	$1.0626
Freight, smelting and marketing product, including New York Office expenses	.1604	.1703	.1747
Cost per ton of running expenses	$1.3481	$1.1894	$1.2373
Total expenses (including construction) per ton of rock treated	$1.5359	$1.2969	$1.3599

United States Exports of Copper.

BY MONTHS.

Exports of copper from the United States, as per the official returns made by the Copper Producers' Association, were as follows, in tons of 2,240 pounds fine:

1892	Long Tons.
July	3,450
August	1,545
September	1,458
October	3,144
November	3,897
December	4,486
Total last 6 months	17,980

1893	Long Tons.
January	3,171
February	1,815
March	2,334
April	3,450
May	4,482
June	5,109
July	7,181
August	9,127
September	16,131
October	11,478
November	7,821
December	8,293
Total 12 months	80,392

UNITED STATES EXPORTS OF COPPER—CONTINUED.

1894	Long Tons.
January	7,717
February	5,590
March	7,137
April	6,209
May	6,140
June	6,976
July	7,226
August	6,408
September	7,093
October	5,057
November	4,785
December	6,793
Total 12 months	77,131

1895	Long Tons.
January	7,144
February	3,450
March	3,914
April	5,677
May	5,430
June	8,600
July	6,035
August	4,493
September	4,106
October	3,773
November	4,874
December	7,226
Total 12 months	64,722

UNITED STATES EXPORTS OF COPPER—Continued.

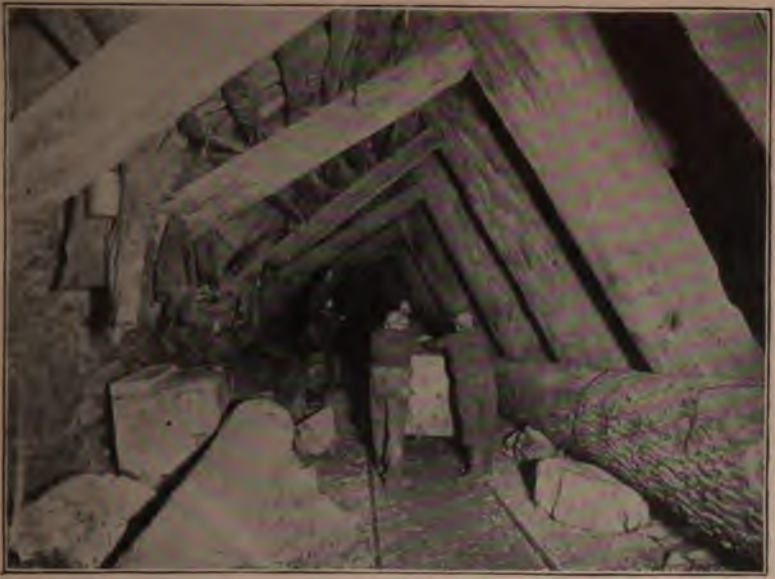
1896	Long Tons.
January	8,168
February	8,296
March	10,892
April	10,684
May	10,481
June	9,797
July	10,885
August	9,119
September	10,898
October	11,371
November	12,034
December	12,980
Total 12 months	125,605

1897	Long Tons.
January	9,651
February	8,856
March	11,232
April	10,279
May	12,175
June	12,677
July	13,728
August	10,971
September	10,980
October	8,785
November	9,294
December	10,582
Total 12 months	129,210

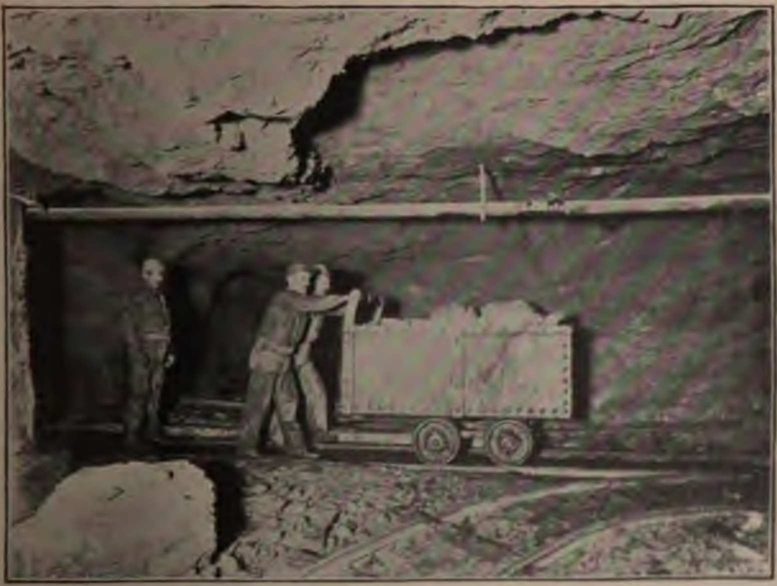
UNITED STATES EXPORTS OF COPPER—CONTINUED.

1898	Long Tons.
January	11,030
February	9,611
March	13,714
April	11,577
May	12,796
June	9,556
July	15,354
August	11,424
September	11,280
October	10,810
November	14,741
December	13,222
Total 12 months	145,115

1899	Long Tons.
January	9,204
February	8,391
March	14,414
April	7,423
May	7,026
June	10,002
July	7,160
August	10,920
September	7,753
October	11,360
November	10,809
Total 11 months	104,262



TAMARACK MINE.



TAMARACK MINE. TRAMING TO THE SHAFT.

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Wolverine Copper Mining Company.

The Lake Superior copper mining property owned by this company is east of the Centennial and south of Kearsarge, and operations have been carried on most successfully. Its growth has been rapid; both in product and the value of its stock, and throughout the different stages of its development its career has been marked by careful management and thorough mining ability.

The company was organized August 2, 1890, and has a capital of $1,500,000, divided into 60,000 shares of $25 each. At the organization $10 per share was paid in, or $600,000, and since that time $180,000 has been paid in on assessments. Land, buildings, machinery, dwellings, etc., cost $550,000. On the 7th of July, 1898, about 80 acres of land additional were purchased at a net cost of about $104,500, which was paid for out of the company's surplus.

For the fiscal year ending June 30, 1899, the production of refined copper was 4,700,373 pounds, as compared with 3,470,927 pounds for the twelve months ending June 30, 1898, and 2,237,698 pounds for the year ending June 30, 1897. Total cost per pound of refined copper laid down at point of delivery during the last fiscal year, exclusive of construction, was 7.48 cents, against 7.96 cents for the previous year, and 8.27 cents for year ending June 30, 1897.

The reduction in cost last year was effected notwithstanding the fact that a higher rate of wages was paid to the employees at the mine.

The company received for its copper during the last fiscal year on an average 14.35 cents per pound, and the net profit was equal to $5.22 per share. The Wolverine has paid three dividends, as follows: October 1, 1898, $1 per share, or $60,000; April 1, 1899, $1.50 per share, or $90,000, and on October 2, 1899, $2 per share, or $120,000. Balance of assets at the end of last fiscal year, June 30, 1899, were $277,689.45, as compared with $218,784.73 on June 30, 1898. The company is now receiving much higher prices for its copper, and it is said on competent authority will earn during the last half of 1899 about $200,000. The shares of this mine touched $50 in January, 1899, and at this figure would give the property a market valuation of $3,000,000. With the market price of copper say 18 cents, and Wolverine cost of production and output same as that for the last fiscal year, this mining company could earn during the calendar year 1900 the sum of $494,479 (about $8.25 per share), or a sum fully equal to 16 per cent. on a valuation of $50 per share, or earnings equal to about 11 per cent. on a market valuation of $75 per share. The Calumet & Hecla, at $800 per share, and $80 per share in dividends annually, is a 10 per cent stock, so that the investment value of the Wolverine is apparent.

There are four shafts on the Wolverine property, but the principal operations are carried on at three of these. During the past fiscal year No. 4 shaft was sunk 259 feet from the ninth to below the eleventh level. The increase to the product of the mine has been drawn largely from this shaft. Levels were extended at this No. 4 shaft, and stoping contributory thereto was done last year. No. 4 shaft is equipped for doing excellent work, with boiler and compressor houses containing the necessary machinery. The rock and shaft house is 50 x 40 feet, and well adapted for its proper use. A Bullock hoist, with 12-foot drum and a 24 x 28 inch Corliss engine, is in operation.

No. 3 shaft was sunk 274.2 feet between June 30, 1898, and June 30, 1899, and is now below the fifteenth level. Extension of levels from this shaft was also made during the past year, and some very good pieces of copper bearing ground opened, showing copper of a heavier grade and better than the average. The richest territory has been found between No. 3 and No. 4 shafts, the distance between these two shafts being 1,385 feet. Connections between No. 3 and No. 4 exist at nearly every level.

No. 2 shaft is down to the fourteenth level, and this lower level was opened south 130.1 feet last fiscal year.

No. 1 shaft is the most northerly and has only been sunk to a slight depth, as the course of the lode runs south of it.

The quantity of rock hoisted during the fiscal year ending June 30, 1899, was 217,243 tons. Of this 32,444 tons was discarded, or about 15 per cent., on account of its poor quality. There were transported to mills and stamped 184,799 tons, which yielded 5,360,740 pounds mineral, and at 87.68 per cent gave 4,700,373 pounds refined copper. For the year previous the mineral ran 88 per cent. copper, and during the year 1896-97 it was 87½ per cent. The high percentage of copper in mineral found in the Wolverine product is a noted feature of this property.

The stamp mill of the company, with a single stamp having solid head and 18-inch cylinder, has a capacity of 300 tons of rock in the 24 hours. A lease of another head from the Allouez Mining Company, about four miles distant, has been necessary to treat the larger output, but a new stamp mill of modern type is among the contemplated plans in the not very distant future. The good surplus in the treasury assures the adequate means for this improvement when the step is decided on.

SUMMARY OF RESULTS.

BY WOLVERINE COPPER MINING COMPANY.

	1898-99	1897-98	1896-97
Rock hoisted, tons..........	217,243	167,568	108,320
Rock stamped, tons.........	184,799	130,089	82,270
Mineral, lbs................	5,360,740	3,949,045	2,557,445
Refined copper, lbs.	4,700,373	3,470,927	2,237,698
Yield of rock treated, per cent.....................	1.271	1.334	1.36
Cost per ton of rock hoisted.	$1.33	$1.39	$1.45
Cost per ton of rock stamped	1.56	1.79	1.91
Cost per lb. of refined copper at mine..................	6.14c.	6.71c.	7.02c.
Cost of smelting, freight, etc.	1.34c.	1.25c.	1.25c.
Total cost per lb. of refined copper	7.48c.	7.96c.	8.27c.
Total cost per lb. refined copper, including construction.....................	7.71c.	9.73c.	8.47c.

Production of the Wolverine Copper Mining Company for the three months, July, August and September, 1899, amounted in the aggregate to 1,199,454 pounds of refined copper.

ASSETS AND LIABILITIES OF WOLVERINE COPPER MINING COMPANY.

JUNE 30, 1899.

Assets.		
Cash in bank		$54,920 50
Deposit in Trust Company		125,000 00
Copper bills		114,171 33
Accounts receivable		923 33
		$295,015 16
At Mine.		
Cash	$1,753 50	
Fuel	6,016 22	
Supplies	8,106 78	
Accounts receivable	1,155 22	
		$17,031 72
		$312,046 88
Liabilities.		
Indebtedness at mine	$28,514 76	
Accounts payable	5,842 67	
		$34,357 43
Balance of assets		$277,689 45

Officers of the Wolverine Copper Mining Company are the following:

President:

JOHN STANTON.

Directors:

JOHN STANTON, J. R. STANTON,
JOSEPH E. GAY, J. W. HARDLEY,
SAMUEL L. SMITH, of Michigan.

Secretary and Treasurer:

J. R. STANTON.

Transfer Agent, The American Loan & Trust Co., 53 State Street, Boston.

Office, 11 and 13 William Street, New York.

STATEMENT OF RECEIPTS AND EXPENDITURES OF THE WOLVERINE COPPER MINING COMPANY FROM DATE OF ORGANIZATION TO JUNE 30, 1899.

Receipts.

From Capital Stock (60,000 shares at $10 per share), paid in at organization	$600,000 00	
Less paid for real estate, land, buildings, machinery, dwellings, etc.	550,000 00	
		$50,000 00
From assessments		180,000 00
From copper, 500,074 lbs., at 11.30 cts. (1891-1892).		56,514 13
From copper, 218,855 lbs., at 10.98 cts. (1892-1893).		24,030 00
From copper, 1,611,857 lbs., at 9.83 cts. (1893-1894).		158,507 70
From copper, 1,744,070 lbs., at 9.68 cts. (1894-1895).		168,763 60
From copper, 2,011,638 lbs., at 10.86 cts. (1895-1896).		218,404 42
From copper, 2,237,698 lbs., at 11.16 cts. (1896-1897).		249,845 65
From copper, 3,470,927 lbs., at 11.42 cts. (1897-1898).		396,703 86
From copper, 4,700,373 lbs., at 14.35 cts. (1898-1899).		674,722 00
Interest received		7,087 76
		$2,184,579 12

Expenditures.

Expenses previous to June 30, 1898		$1,228,770 08	
Real estate (lands purchased)		165,665 23	
Expenditure, June 30, 1898, to June 30, 1899		362,454 36	
		$1,756,889 67	
Dividend Oct. 1, 1898	$60,000 00		
Dividend April 1, 1899	90,000 00	150,000 00	
			$1,906,889 67
Balance of receipts over expenditures			$277,689 45

Total World's Copper Production.

IN TONS OF 2,240 POUNDS FINE.

PER RETURNS.

Year.	Tons.
1898	424,303
1897	397,814
1896	373,363
1895	334,285
1894	324,505
1893	303,530
1892	310,472
1891	279,391
1890	269,455
1889	261,205
1888	258,026
1887	223,798
1886	217,086
1885	225,592
1884	220,249
1883	199,406
1882	181,622
1881	163,369
1880	153,959

Franklin Mining Company.

This property is one of the oldest at Lake Superior, nevertheless, since "Franklin Junior" was acquired the management is of the opinion that they have enough mineral territory to last for more than a generation. During the year 1898 the company produced 3,300,511 pounds of mineral, which yielded 79.493 per cent. of copper, or 2,623,702 pounds. The capital stock of the company was doubled on April 20, 1898, and the 40,000 new shares were allotted to stockholders at $10 per share, payments being in four equal instalments. This put $400,000 in the treasury during the past year, and provided ample capital to meet the expenses of a new stamp mill and carry on development work at the Franklin Junior. The capitalization of the Franklin Mining Company is now $2,000,000, in 80,000 shares of $25 each. Previous to the increase in capital there was paid in $320,000, and dividend disbursements made aggregating $1,240,000.

The Directors received authority at the annual meeting last year to sell the old mine, but the showing is so encouraging that a large amount of copper is expected from the original Franklin, and the management decided that it would be better policy to continue the mining for copper rather than sell the property at present. The total amount of rock hoisted during the year 1898 was 127,021 tons, of which 79,786 tons were from the old mine, and 47,235 tons from Franklin Junior. The total amount stamped in 11 months last year was 116,696 tons. The stamp mill having been destroyed by fire November 27, 1898, the quantity of rock stamped was 15,330 tons less last year than in 1897. The company have since erected a new stamp mill on Portage Lake, where a mile of water front has been secured, giving ample facilities for disposing of waste sand. The building is of structural steel, 178 by 195 feet in size, and large enough to allow of machinery capable of crushing and washing 1,500 tons of rock per day. The mill is now complete, and stamping going on. The mine and mill are connected by railroad. There were expenditures for mill, land and construction last year of $97,275.39. Construction and development work at Franklin Junior in 1898 cost $198,617.73. The total expenditures for account of the Franklin Junior to January 1, 1899, have been, at the mine $434,305.71, and at the stamp mill $88,023.89, or a total of $522,329.60. These expenditures are exclusive of cost of Junior Mine and land for location of stamp mill.

There are three shafts on the Franklin Junior, at each of which sinking was done the past year. No. 1 shaft is about 2,000 feet from the northern boundary, and is down 1,140 feet. No. 2 shaft is 1,050 feet south of No. 1, and is sunk 800 feet. No. 3 shaft is about 1,200 feet south of No. 2, and is at a depth of 240 feet. Total openings at the different levels last year were 7,378 feet. No. 2 shaft is a large three-compartment shaft, and is expected to become the chief working shaft, because of its location, and capacity to furnish a great amount of rock. It follows the lode, and at this point it is said it can be followed downward upon the company's territory a distance of 6,000 feet. A great amount of water was encountered in sinking the new shafts, and progress was somewhat retarded thereby. Another shaft was therefore started last year about 900 feet north of No. 1 shaft, and the new opening soon revealed a valuable deposit. The property with its present prospects and equipment has undoubtedly a prosperous future before it.

FRANKLIN MINING COMPANY'S ASSETS AND LIABILITIES.

December 31, 1898.

Assets.

Cash, accounts receivable and copper on hand (since sold)	$166,428 40
Supplies at mine	82,138 26
	$248,566 66

Liabilities.

Drafts outstanding, liabilities at mine, etc	$38,125 03
Surplus, December 31, 1898	$210,441 63

Officers of the company are the following:

THOS. H. PERKINS, *President.*
D. L. DEMMON, *Treasurer.*

Directors:

THOS. H. PERKINS, GEORGE R. RICHARDSON,
O. D. ASHLEY, D. L. DEMMON,
GRAHAM POPE, of Michigan.

Office, No. 19 Congress Street, Boston.

Copper Queen Consolidated Mining Company.

The Copper Queen is one of the richest and best equipped mines in Arizona. This mine is located in the Bisbee district, and has recently added to its facilities, thereby raising its output capacity. This company, as well as other leading Arizona mines, is controlled by Phelps, Dodge & Company, and the management has been most efficient and successful.

The production of the Copper Queen during the year 1898 was 33,749,390 pounds of copper, or 9,749,517 pounds increase over 1897. The full capacity of a converter at this mine amounts to from 1,000,000 to 1,500,000 pounds each per month, and from three to four converters have been in operation. The pneumatic process of concentrating mattes is employed, and for economical reasons it is advisable to operate these large converters up to their capacity. It can readily be understood, therefore, how the installation of an additional converter causes a large increase in output.

The carbonates and sulphurets have abounded in Arizona, but the sulphurets are in excess, and they constitute the bulk of the material which finds its way into the smelters at some of the principal Arizona centres of production. The product at the Copper Queen is derived from a mixture of oxidized ores with the sulphide ores, and a copper of 99 per cent. purity is the result. The territory owned by this company is heavily charged with rich mineral deposits, and the mine is a perfect bonanza as a profit producer. The stock of the company, as previously noted, is private property, and no listing of the shares on any of the exchanges has ever been attempted.

The production of the Copper Queen for the past six years was as follows, in pounds fine:

Year.	Pounds Fine.
1893	13,795,618
1894	12,688,372
1895	15,741,731
1896	23,298,150
1897	23,999,873
1898	33,749,390

The production of the Copper Queen, Detroit, and United Globe mines combined for the first 10 months of 1899 amounts approximately to 47,000,000 pounds of copper.

Officers of the Copper Queen Consolidated Mining Company are as follows:

J. DOUGLAS, *President.*
G. NOTMAN, *Secretary and Treasurer.*
Office, 99 John Street, New York.

The Bingham Copper and Gold Mining Company.

The property belonging to this company consists of five full mining claims, and they also have under bond about as much more ground. It is located about 20 miles from the city of Salt Lake, Utah, on the Rio Grande & Western Railroad, near the town of Bingham. Railroad and tramway facilities are now in operation at the mine.

The company is incorporated under the laws of the State of New Jersey, with a capital stock of $2,000,000, divided into 200,000 shares of the par value of $10 per share. On completion of the organization 50,000 shares of the capital stock were placed in the treasury of the company, 40,000 of which were sold for $200,000 cash, and this amount was placed in the treasury of the company, leaving 10,000 shares of the treasury stock still unsold, also in the treasury.

This property was worked and opened up about 16 years ago, at the same time and in the same way that the property of the Utah Consolidated Mining Company was worked. The Jordan River is located on the railroad, about 12 miles from the mine. The property of the Bingham Company is favorably located for economical operations, both in mining and smelting the ores.

According to the data collected by us from thoroughly posted sources regarding this promising mining property, we are able to incorporate in this article the following particulars and facts regarding the Bingham Company, which will be found of special interest and value.

It was mined and operated as a free milling gold property, and worked only in the oxidized ores, which extend down from the surface about 150 feet in depth; there a change takes place, and the ores go into copper sulphides.

The oxidized ores having been opened up show a vein from 20 to 100 feet wide. These oxidized ores have been explored for about 150 feet deep on the vein, and about 400 feet in length, with numerous shafts and crosscuts. Drifts and crosscuts have been pushed along the line of these oxidized ores, and it is believed from all indications they will extend through the entire territory of the Bingham Company's property.

The company has sunk four winzes down into the sulphide ores, to a depth of about 100 feet. The winzes were said to be all in solid copper and iron sulphides which show an average of 8 to 10 per cent. copper and about $5 in gold and silver, $3 of which will be gold and $2 silver. There is an excess of iron in the ore, and it is very desirable for smelters, and the expense of smelting such ore is estimated not to exceed $3 per ton.

In October, 1899, from 35 to 40 men were being employed daily. At that date the development of the mine was progressing rapidly, both from the fact that the mine is entirely free from water and because of the complete equipment of machinery for all classes of work. The new crosscut tunnel, which is being driven to cut the vein at a much lower depth than the present workings, has been advanced

700 feet, with an estimated distance of 300 feet yet to be driven. This crosscut will cut the vein some 500 feet below the present lowest tunnel, opening up extensive stoping grounds.

A new working shaft or incline has been sunk 200 feet on the dip of the vein, and this is being advanced at the rate of from 2 to 3 feet per day. (October, 1899.) This shaft and crosscut, when they meet, will expose large bodies of ore.

At the time this company took charge of the property there were about 500 feet in workings all told; in October, 1899, there were 2,000 feet, of which 1,300 are in the vein and about 800 in crosscuts, etc. The total length of drift on the vein east and west is 550 feet.

The total width of the vein has been crosscut several times, and authoritative reports state that in no place does it show less than 40 feet in width. The ore at the bottom of the working shaft, according to the latest statements, will show an average of 5 per cent. copper, $2.60 gold and 2 to 4 ounces of silver to the ton. There is said to be some 200,000 tons of this ore blocked out.

In the crosscut tunnel several stringers of ore have been opened up, and reports are that several samples indicated the presence of at least 30 per cent. copper, with high values in precious metals. Latest advices from the mine show assays on several of these samples, averaging 57 ounces of silver, 32 per cent. copper and $39 in gold, approximate value of which is placed at $168 per ton.

The directors of the company at a meeting held October 19, 1899, voted to immediately construct a smelter on the company's property, of not less than 150 tons per day capacity. Contracts at this writing are now being let, and it is the intention of the management to push the construction of the smelter as rapidly as possible.

The mine has recently met with a singular experience, in which the main workings in all the upper levels have been relieved of water by natural causes. The mine has been kept dry heretofore by two pumps, but one of the shots which was fired in the breast of the main incline some time ago apparently broke into a fissure, which in a very short time dried up every gallon of water in the workings. This item alone has effected a saving of over $10 per day to the company.

The Bingham management is opening up the property in the anticipation of getting out from 200 to 300 tons of ore per day. Considering the high percentage of copper and precious metals found on the property, and the desirability of the ore for fluxing purposes for smelting, and the favorable location for cheap and economical operations, this property is considered, by those competent to judge of its merits, as one of the best of the new mining propositions. It is located on the same vein as the Utah Consolidated property, and the ore is of the same general character and grade. It is said to be a geological counterpart of the Highland Boy Mine, both in ore occurence and mineralization, and it is coming into prominence on account of its copper possibilities.

The stock of the Bingham Copper and Gold Mining Company was listed on the Boston Stock Exchange, April 18, 1899, and the same is non-assessable.

Officers of the Bingham Copper and Gold Mining Company are as follows:

JOSEPH A. CORAM, *President.*

O. E. WELLER, *Treasurer.*

Directors:

JOSEPH A. CORAM, WILLIAM BAGLEY,
O. P. POSEY, JOHN W. WEEKS,
O. E. WELLER.

Principal Office and Transfer Agent, 60 State Street, Boston, Mass.

Place of Registration, Globe National Bank, Boston.

Centennial Copper Mining Company.

This property, which adjoins Calumet & Hecla on the north and Wolverine on the west, contains 680 acres of mineral land. The Calumet & Hecla Conglomerate and the Osceola Amygdaloid outcrop favorably on the original 640 acres of the Centennial property, and by the purchase in 1898 of 40 acres of land to the east of their line the company now owns also the outcrop of the Kearsarge or Wolverine Amygdaloid, thus giving it the three best known lodes of the district.

The present management, which took possession after its reorganization in the Summer of 1896, began the work of investigation early in 1897, and continued to explore the Calumet & Hecla Conglomerate and the Osceola Amygdaloid lodes until the Autumn of 1898, when, having purchased the outcrop of the Kearsarge lode, which crosses the 40 acres of land to the east and adjoining their property, they added this to their line of investigation.

No. 6 shaft on the Conglomerate has been sunk below the twelfth level, and the fifth level extended north and the sixth level south several hundred feet each. At times this lode has been very rich, but on the whole has proved so changeable that only by further thorough investigation can its real value be determined.

On the Osceola lode, No. 1 shaft has been sunk to a depth of 1,000 feet, while No. 2 shaft is 1,100 feet deep. This lode has proved very satisfactory, and as several thousand feet of drifts have been opened, it will furnish a great deal of rich stamp rock to the new mill when it is built. The policy of the present management is to thoroughly open the mine, using its present stamp mill, which has one Balls head capable of treating about 300 tons per day, for opening and exploration purposes.

In order to explore the Kearsarge lode on the 40 acres of land purchased in 1898, the Centennial Company sunk a vertical shaft through sand and rock 90 feet deep. From the bottom of this shaft a crosscut was started west, and at a distance of 180 feet from the shaft the lode was located. At this point it proved to be more than 20 feet wide and very rich from foot to hanging. Upon the discovery of this lode the company started one of a pair of large incline shafts. The first shaft will soon be down through the sand to the rock, and when this is accomplished they will begin on their second shaft, which will diverge and cross the corner of Section 7. This pair of shafts will enable the company to take out the whole of the Kearsarge lode, which underlies the 640 acres of the old Centennial property.

By their purchase of the Gregory mill property on Torch Lake the company own one of the most valuable mill sites at Lake Superior, and it is their purpose as soon as the mine is properly opened and developed to build a large modern mill there, capable of treating 1,500 tons to 2,000 tons of rock per day.

The company is in a strong position financially, and promises within another year to become a large producer, as they will have both the Kearsarge and Osceola lodes to draw from for their mill. It is the intention of the present management to further investigate the conglomerate lode in the future, and with the three most important lodes in Houghton County crossing almost their entire property their future ought to be one of continued growth and great success. Capital of the Centennial Copper Mining Company is $2,500,000 in 100,000 shares, of which there are 10,000 in the treasury.

The officers of the company are as follows:

H. F. FAY, ***President.***
W. B. MOSMAN, ***Sec'y and Treas.***
Address, 60 State Street, Boston.

Directors:

H. F. FAY,
JOHN C. WATSON,
STEPHEN R. DOW,
WILLIAM HOWELL REED,
EDMUND S. CLARK,
WILLIAM A. HAZARD,
JAMES CHYNOWETH, of Michigan.

TREASURER'S STATEMENT.

CENTENNIAL COPPER MINING COMPANY.

For Eleven Months Ending May 1, 1899.

Quick Assets:

Cash at mine	$2,885.75	
Supplies at mine	9,200.00	
Bills receivable	99,019.69	
Copper unsold (at 18 cents)	27,000.00	
Cash in bank at Boston	177,095.43	
		$315,200.87

Liabilities:

Accounts due at mine	$20,693.04	
Drafts in transit	6,431,91	
		27,124.95
Balance quick assets		$288.075.92

European Copper Production.

The production of copper by the foreign reporting mines, as per the official figures of the Copper Producers' Association, was as follows, in tons of 2,240 pounds fine:

1892.	Long Tons.
July	6,358
August	6,888
September	5,478
October	6,476
November	6,789
December	7,666
Total last 6 months	39,655

1893.	Long Tons.
January	5,736
February	6,762
March	6,896
April	6,913
May	6,806
June	7,935
July	6,095
August	7,057
September	6,303
October	7,081
November	6,953
December	7,248
Total 12 months	81,785

EUROPEAN COPPER PRODUCTION—CONTINUED.

1894.

	Long Tons.
January	8,145
February	7,217
March	6,922
April	7,385
May	8,013
June	7,611
July	6,960
August	7,367
September	7,110
October	7,231
November	6,964
December	7,606
Total 12 months	88,531

1895.

	Long Tons.
January	6,737
February	6,739
March	7,424
April	7,219
May	7,400
June	6,965
July	6,988
August	7,129
September	6,947
October	7,753
November	7,728
December	7,149
Total 12 months	86,178

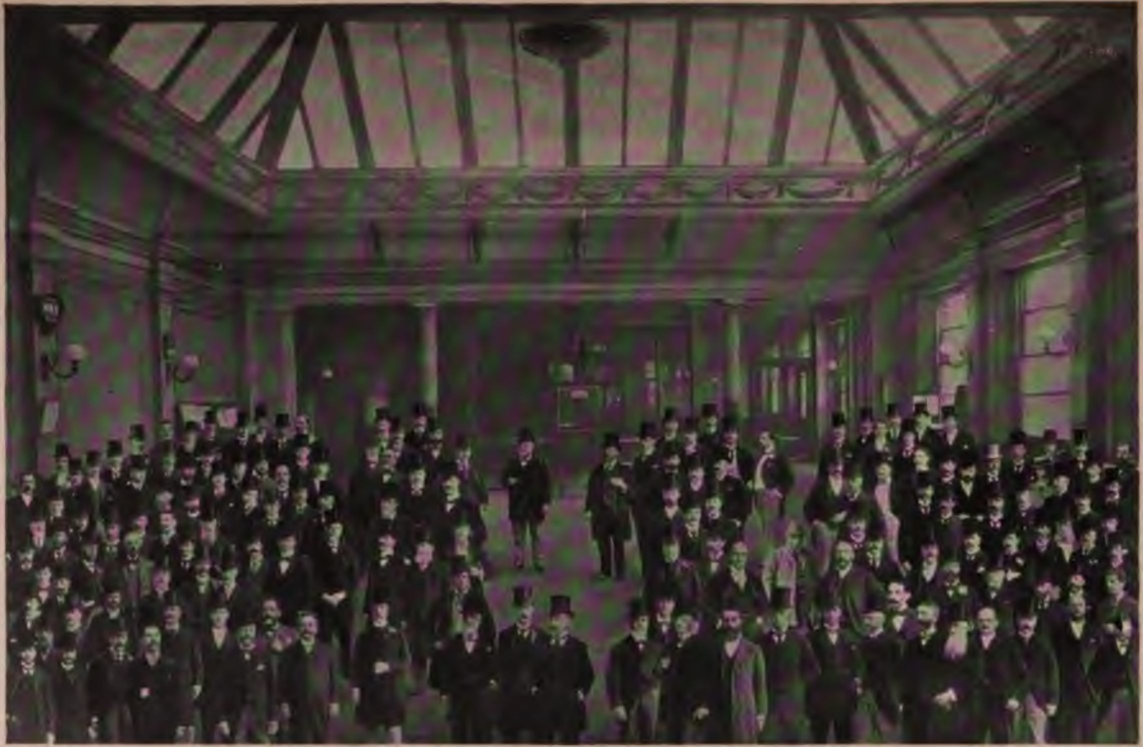
EUROPEAN COPPER PRODUCTION—CONTINUED.

1896.

	Long Tons.
January	**6,834**
February	**7,096**
March	**6,910**
April	**6,865**
May	**7,495**
June	**7,055**
July	**7,847**
August	**7,022**
September	**7,182**
October	**7,297**
November	**7,108**
December	**7,685**
Total 12 months	**86,396**

1897.

	Long Tons.
January	**6,595**
February	**7,241**
March	**8,358**
April	**7,318**
May	**7,116**
June	**7,635**
July	**7,327**
August	**6,963**
September	**7,541**
October	**7,108**
November	**7,073**
December	**7,995**
Total 12 months	**88,270**



LONDON METAL EXCHANGE.

EUROPEAN COPPER PRODUCTION—CONTINUED.

1898.	Long Tons.
January	5,556
February	7,303
March	7,121
April	6,824
May	6,488
June	7,588
July	6,794
August	6,909
September	7,122
October	7,332
November	7,080
December	8,436
Total 12 months	84,554

1899.	Long Tons.
January	5,852
February	7,399
March	8,077
April	7,911
May	7,355
June	7,035
July	7,390
August	7,292
September	7,839
October	7,834
November	7,896
Total 11 months	81,880

The Mohawk Mining Company.

This is a new Lake Superior corporation, organized under the Amended Acts of Michigan, November 4, 1898, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each.

There are 800 acres of land in the Mohawk property, situated in Keweenaw County, Mich. Underground developments have been carried on by the sinking of three shafts. No. 1 shaft has reached a depth of 210 feet; No. 2 is down 280 feet, and No. 3 is down about 120 feet. Rich copper ground has been opened up at these excavations, and the prospects for the Mohawk are excellent.

The lode on the property has a dip of about 39 degrees, and is known as the Kearsarge. This is the same lode from which the Wolverine Mine is obtaining its product, and the same vein characteristics are observed as at the Wolverine. The most recent reports from the Mohawk are of a glowing character, and mining men are of the opinion that the Mohawk is to become a second Wolverine, only on a possibly large scale.

The new shaft started is about 1,100 feet from No. 2, and has gone into mineral of exceptional richness. The lode has been exposed, it is reported, for a width of fully 18 feet, with neither the foot nor hanging wall in sight. The lode in the three shafts has now been well exposed, and the formation is excellent. The Kearsarge Amygdaloid lode, it is said, traverses the Mohawk's property for a distance of nearly two miles, and varies in width from 15 to 18 feet.

The Mohawk has a more extensive territory than the Wolverine, and when fully developed will make a much larger mine than the latter. The company has secured a mill site, and other facilities which will enable them to treat and handle their output to advantage. The property has made such a good showing from the beginning that bright expectations are entertained regarding its future.

The shares of the new organization were listed on the Boston Stock Exchange January 5, 1899.

Officers of the Mohawk Mining Company are as follows:

JOHN STANTON, ***President.***
JOSEPH E. GAY, ***Vice-President.***
J. R. STANTON, ***Sec'y and Treas.***

Directors:

JOHN STANTON,
J. R. STANTON,
JOSEPH E. GAY,
W. A. PAINE,
FRED. SMITH.

Principal Office, 11-13 William Street, New York.

Transfer Office, American Loan & Trust Company, Boston.

Place of Registration, Boston Safe Deposit and Trust Company, Boston.

NEW YORK

Prices of Copper for 38 Years.

The following shows the highest and lowest prices in cents per pound for Lake Superior refined ingot copper in the New York market for the past 38 years, and the months in which extreme prices were recorded:

Years.	Months the Lowest Prices were Recorded.	Range of Prices Covering the Year.	Months the Highest Prices were Recorded.	Years.
1860	December	19¾ @ 24	January	1860
1861	July	17½ @ 27	December	1861
1862	May	20¾ @ 32⅞	Oct. and Nov.	1862
1863	July	29 @ 38¾	December	1863
1864	January	39 @ 55	July	1864
1865	July	28 @ 50½	January	1865
1866	November	26½ @ 42	January	1866
1867	December	21½ @ 29¼	January	1867
1868	January	21½ @ 24½	July and Dec.	1868
1869	December	21½ @ 27	February	1869
1870	March	19 @ 23⅜	November	1870
1871	April	21¼ @ 27	December	1871
1872	January	27⅛ @ 44	April	1872
1873	November	21 @ 35	January	1873
1874	August	19 @ 25	January	1874
1875	January	21½ @ 23⅞	September	1875
1876	August	18¾ @ 23¼	January	1876
1877	December	17½ @ 20½	February	1877
1878	October	15½ @ 17⅝	January	1878

THOMAS W. LAWSON.

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TILDEN FOUNDATIONS.

PRICES OF COPPER FOR 38 YEARS.—CONTINUED.

Years.	Months the Lowest Prices were Recorded.	Range of Prices Covering the Year.	Months the Highest Prices were Recorded.	Years.
1879	January	15½ @ 21¾	November	1879
1880	June	17⅞ @ 25	January	1880
1881	July	16 @ 20⅜	December	1881
1882	April	17⅞ @ 20⅜	January	1882
1883	November	14⅞ @ 18⅛	January	1883
1884	December	11 @ 15	January	1884
1885	May	9.80 @ 11⅞	February	1885
1886	May	10 @ 12⅛	December	1886
1887	May	9.95 @ 17¾	December	1887
1888	January	15.85 @ 17.60	November	1888
1889	September	11 @ 17½	January	1889
1890	March	14 @ 17¼	July	1890
1891	December	10¼ @ 15	January	1891
1892	February	10½ @ 12⅜	December	1892
1893	August	9.60 @ 12½	January	1893
1894	June	9 @ 10¼	January	1894
1895	April	9⅜ @ 12¼	August	1895
1896	January	9¾ @ 12	June	1896
1897	November	10¾ @ 12	January	1897
1898	January	11 @ 13¼	December	1898

Amalgamated Copper Company.

This company was organized April 27, 1899, with a capital of $75,000,000, divided into 750,000 shares of common stock, of the par value of $100 each. The corporation was organized under the laws of the State of New Jersey for the purpose of purchasing and operating copper producing properties. It has no bonds or mortgage debt, and the company has power to increase its capital to an unlimited amount.

The announcement has been made officially that the company has already purchased large interests in Anaconda Copper Company, Parrot Silver and Copper Company, Washoe Copper Company, Colorado Smelting and Mining Company, and other companies and properties.

After the charter of the Amalgamated Copper Company was filed at Trenton, N. J., on the above mentioned date, the National City Bank of New York announced the next day that it would receive offers for subscriptions to 750,000 shares of the par value of $100 each of the stock of the said copper company until 12 o'clock noon May 4, 1899, at the rate of $100 per share.

The placing of the Amalgamated shares on the market created considerable excitement, and when the time limit expired crowds were at the doors of the National City Bank anxious to get in their subscriptions before the books closed. The public demand was so great that the stock was largely over-subscribed, and the allotment was cut down to 20 per cent. of the amount subscribed for. Subscriptions required to be accompanied by 5 per cent. of the amount subscribed for, the balance being payable within 10 days after date of notice of allotment.

The Amalgamated Company controls valuable properties, and the new corporation represents an aggregation of enormous capital. The company paid its first quarterly dividend, amounting to 1½ per cent. and ½ per cent. extra on its capital, on October 16, 1899. The amount disbursed was $1,500,000.

The Boston Stock Exchange has placed in the unlisted department the shares of the Amalgamated Copper Company. This was done in December, 1899.

Officers of the Amalgamated Copper Company are as follows:

President:
MARCUS DALY.

Vice-President:
H. H. ROGERS.

Secretary and Treasurer:
WM. G. ROCKEFELLER.

Directors:

MARCUS DALY,	ROBERT BACON,
WM. ROCKEFELLER,	* R. P. FLOWER,
HENRY H. ROGERS,	F. D. OLCOTT,
A. C. BURRAGE,	JAMES STILLMAN.

* Deceased.

Office, 52 Broadway, New York.

Market Price of Lake Ingot Copper at New York.

FOR EIGHT YEARS, BY MONTHS.

IN CENTS PER POUND.

Month.	1899.		1898.		1897.		1896.	
	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highes.
January..	18.25	17.00	11.00	11.00	11.50	12.00	9.75	10.25
February.	17.00	18.50	11.00	11.75	11 87½	12.00	10.25	11.25
March. ..	17.25	18.00	11.75	12.00	11.75	12.00	10.75	11.25
April.....	18.00	19.37½	12.00	12.50	11.25	11.75	10.75	11.00
May......	18.50	19.25	12.00	12.00	11.00	11.00	10.75	11.62½
June.....	17.87½	18.50	11.75	12,00	11.00	11.25	11.50	12.00
July	18.25	18.50	11.50	11 87½	11.00	11.25	11.00	11.50
August...	18.50	18.75	11.50	12 50	11.12⅛	11.37½	10.50	11.15
September	18.37½	18.50	12.25	12.50	11.25	11 37½	10.75	11.00
October ..	17.00	18.50	12 37½	12.62½	11.00	11.25	10.50	11.00
November	17.00	17.25	12.62½	13.00	10.75	11.00	10.75	11.50
December	.....	.....	12.87½	13.25	11.00	11.00	11.25	11.60
Year	.....	.....	11 00	13.25	10.75	12.00	9.75	12.00

Month.	1895.		1894.		1893.		1892.	
	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
January..	9.85	10.00	10.00	10.25	12.25	12.50	10.75	11.00
February.	9.65	10.00	9.62½	10.00	12.00	12.25	10.50	10.62½
March....	9.35	9.75	9.37½	9.62½	11.75	12.00	10.50	12.12½
April.....	9.37½	9.87½	9.37½	9.50	11.00	11.50	11.62½	12.12½
May......	9.75	10.75	9.25	9.37½	11 00	11.12½	12.00	12.12½
June.....	10.50	10.75	9.00	9.12½	10.50	11 00	11.75	12.00
July	10.62½	12.00	9.00	9.12½	10.00	10.50	11.25	11 75
August...	11.75	12.25	9.00	9.12½	9 62½	10.12½	11.62½	11.62½
September	12.00	12.25	9.12½	9.87½	9.75	9.87½	11.12½	11.50
October...	11.87½	12.25	9.50	9.75	9.75	9.75	11.00	11.87½
November	11.00	11.75	9.37½	9.50	9.75	10.25	11.75	12 37½
December	10.00	11.00	9.50	10.00	10.37½	10.50	12.12½	12.37½
Year.....	9.35	12.25	9.00	10 25	9 62½	12.50	10.50	12.37½

Isle Royale Consolidated Mining Company.

This company was organized in 1897 by the consolidation of the Huron, Isle Royale and Grand Portage mines, with a capital of $2,500,000, divided into 100.000 shares of the par value of $25 each.

The company consolidated with the Miners' Copper Company in the spring of 1899, when the capitalization was made $3,750,000, under the laws of New Jersey, divided into 150,000 shares of the par value of $25 each.

The following official statement was given out in March, 1899, of the financial and physical condition of the property for the year 1898:

Financial condition is as follows:

Received from subscriptions		**$1,000,000**
Received from interest to Jan. 1, 1898	**$2,682**	
Received from interest during 1898	**20,026**	
		22,708
Total receipts		**$1,022,708**
Total expenses to Jan. 1, 1898	**55,143**	
Total expenses during 1898	**122,520**	
Total expenses		**177,663**
Balance on hand, Jan. 1, 1899		**$845,045**

Superintendent Parnall says: "As a r
done for the year ending December 31,

formulate anything that would constitute a systematic order of mining operations, from the fact that up to this time very little has been done outside of sinking Nos. 1 and 2 shafts. No drifting has been done for the very good reason that to drift with the equipment installed to date would mean the stopping of sinking, which, up to a given amount, was the best policy to pursue.

"It is needless to say here that where tributers have had unrestrained liberty to work anywhere they saw a chance to produce copper for so long a time as they did in the old Isle Royale and Grand Portage, little of value in sight would be left behind, and the despoliation of shafts and levels is always the inevitable consequence. We have found no exception to this rule, and hence the cleaning out and retimbering of the old have been much more tardy and expensive than the sinking of the shafts in new ground. Happily the old is done with, and to date both shafts are at the eleventh level, and will soon be on the way to the twelfth, where for a year at least they can stop and await the result of drifting. To get to the twelfth level with both shafts will take until April 20.

"The number of feet sunk in new ground to December 31 is as follows: No. 1 shaft, 538 feet; No. 2 shaft, 236 feet. By April 20 there will be practically six levels at each shaft in which drifts can be started in virgin ground. Thus, 24 drifts can be in operation on or before May 1.

"A new compressor has been purchased and is now being put in place at No. 1 shaft. This, with a small compressor at No. 2 shaft, now in operation, will answer for all the opening work. A new steel structure was completed a few weeks since in which will be erected the above new compressor, and also a new cone and straight face hoist, which is now under contract to be delivered in July next. The hoist is designed for a depth of 6,000 feet. A new boiler house, which will be of stone and steel, also four new 84-inch firebox boilers, are under contract, and will be ready for duty in early summer.

"A similar hoist will be needed for No. 2 shaft, and should be contracted for at an early date. This, with the necessary rock and shaft houses, would constitute efficient and permanent equipments for both shafts. It will be necessary the coming summer to add to the mine buildings such as the current needs require, but nothing further.

"A few months' drifting on the scale that can be taken up after drifting commences will furnish a better index to further expensive outlays than can at this time be anticipated. So far the shafts in the new ground sunk through give promise of good results. If the drifts open up as good there will no danger for the future."

The property was purchased for $1,000,000 and paid for with stock on which $20 a share was paid in; the other $1,000,000 was subscribed for in cash. All these mines were producers in former years, but were not opened to a depth customary in these days of modern mining methods. The owners have been busy reopening and enlarging shafts and getting the property in shape for producing. New engine and boiler houses have been erected, besides other buildings. There is an extensive length of lode upon which to conduct developments.

During last summer Isle Royale was reported looking remarkably well in both shafts and new openings. Extensive surface improvements of a substantial character are under way, and our information is to the effect that production is expected to begin in the Spring of 1900.

Officers of the Isle Royale Consolidated Mining Company are:

A. S. BIGELOW, *President.*
W. J. LADD, *Treasurer.*

Office, 199 Washington Street, Boston.

VIEW OF HOUGHTON AND PORTAGE LAKE, MICHIGAN.

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Arizona Copper Production.

The principal copper mines of Arizona made a large increase in their output last year, and the territory is prepared to keep up a large production of copper The following returns show the product of the several properties operating in Arizona:

Company.	1898. Pounds Fine.	1897. Pounds Fine.	Increase.	Decrease.
United Verde	42,328,926	31,355,025	10,973,901	......
Copper Queen	33,749,390	23,999,873	9,749,517	......
Arizona Copper Co..	18,169,096	13,727,911	4,441,185	......
Detroit	11,428,992	8,405,138	3,023,854	......
United Globe	2,847,460	1,241,975	1,605,485	......
Old Dominion	1,800,000	2,000,000	....	200,000
Other Sources	859,335	290,000	569,335	......
Total	111,183,199	81,019,922	30,163,277	

The leading producers in Arizona are increasing their facilities, and a larger output is expected this year from the principal companies in that district. New propertiess are also being developed, but it will be some time before they are prepared to turn out a regular product.

Detroit Copper Mining Company of Arizona.

This company started into active operation in 1881, and during the past 18 years has produced a great deal of copper The Detroit is one of a group of mines under the control of Phelps, Dodge & Co. It is located near Clifton, Ariz., and during 1898 produced 11,428,992 pounds of copper, against 8,405,138 pounds in the year 1897. The company produces a copper having the high percentage of 99 purity, the quality in this respect being equal to that of the Copper Queen.

The Detroit Company was recently preparing for a larger production, and with another new converter plant added to its equipment its annual output may be expected to show an increase of several millions of pounds.

Arizona copper ores have been famous for their fusibility, whereby it has been possible by a single operation to produce bar copper. The time element and the item of cost, therefore, have been favorable factors in the successful development of this and other Arizona mines. Within recent years, however, operators have resorted to the mixing of ores which have undergone oxidation with sulphurets, from which a matte is obtained. The matte is afterward sent to converters and made into pig copper.

This company has a valuable property, and with the present stimulated demand for copper is earning handsome profits. The production of the Detroit Company for the past six years was as follows:

Year.	Pounds Fine.
1893	4,492,728
1894	5,777,744
1895	3,790,128
1896	7,016,348
1897	8,490,037
1898	11,428,992

Officers of the Detroit Copper Mining Company of Arizona are as follows:

J. DOUGLAS, *President.*
G. NOTMAN, *Secretary and Treasurer.*

Office, 99 John Street, New York.

The United Globe Mines.

The mines of this company are located in the Globe District, Arizona, and represent a portion of Phelps, Dodge & Company's extensive mining interests in that Territory. The product of these mines last year amounted to 2,847,460 pounds of copper, against 1,241,975 pounds in 1897. With recently completed railroad connection to this locality a larger output may be expected from the United Globe plant.

The company from this time forward will have the advantage of the newly established transportation facilities, and a greater degree of activity will undoubtedly prevail in the Globe District henceforth. There were no returns of output from these mines from 1891 to 1896. In 1891 the product was 2,302,765 pounds. During the past three years the production was as follows:

Year.	Pounds Fine.
1896	2,020,565
1897	1,241,975
1898	2,847,460

Officers of the United Globe Mines are:

J. DOUGLAS, *President.*
G. NOTMAN, *Secretary and Treasurer.*

Office, 99 John Street, New York.

Arizona Copper Company, Limited.

This company, as indicated by its name, operates mines in Arizona. It is controlled by British capitalists, and has worked on a large scale with a great deal of success. For the fiscal year ending September 30, 1898, after the sum of £26,782 had been deducted for interest and other items, the profits were £149,100. Dividends of £45,194 on the preference shares and £35,894 on the common shares were paid from operations for the fiscal year ending September 30, 1898. The group of mines owned by this company were formerly known as the Longfellow mines.

The output by the Arizona Copper Company for the calendar year 1898 is returned at 18,169,096 pounds of copper, being an increase of 4,441,185 pounds compared with the output for 1897. After providing £14,000 for reserve and improvement fund at the mines and £37,252 for a sinking fund to be appropriated to debentures, the surplus on September 30, 1898, was £97,757. These mines have been active for a long period of years, and lately increased facilities have placed the company in position to produce on a larger scale.

The production of this company last year exceeded that for the entire Territory of Arizona in 1882. The output of the Arizona Copper Company is subjoined for the following years:

Year.	Pounds Fine.
1893	7,871,819
1894	9,935,812
1895	11,308,910
1896	13,042,000
1897	13,927,911
1898	18,169,096

Lewisohn Brothers are the selling agents for the company's product, and its success is attributed in a great measure to this firm.

The company has a capital of £319,055 in preference shares of £100 each, and £319,055 in ordinary shares of £1 each. The preference shares pay 7 per cent. per annum. The company paid a dividend in July, 1899, of 2s. per share on the ordinary shares.

Old Dominion Copper Mining and Smelting Company.

The Old Dominion Copper Mining and Smelting Company has increased its capital to $5,000,000, divided into 200,000 shares of the par value of $25 each. The increase in capital was agreed to in June, 1899, and anent this matter President Bigelow, in a circular to stockholders, said:

"Arrangements have been made for the purchase of a large group of mining claims located near Globe and known as the Continental group, containing 13 claims.

"This group contains, already developed, quite large-sized ore bodies of copper sulphides, which is the character of ore that has been anxiously sought for in the mines of this company, not so much for the copper values contained as for fluxing qualities which will render more economical the treatment of the Old Dominion ores and make possible a closer saving of the copper values.

"In order to properly develop these claims, it will be necessary to build about seven miles of railroad, and also to erect a concentrating and converting plant later on. This will call for a large amount of money; and at a meeting of the directors, held May 10, it was voted to call a special meeting of the stockholders for June 15, to authorize the increase of the capital stock of the company to 200,000 shares, by issuing 50,000 new shares, a portion of which, if authorized, are to be offered to the stockholders at par.

"The railroad from Bowie to the mines at Globe is completed, and the new furnaces are now running smoothly, so that the company from this time forward should make a handsome profit on its operations. With the new stock authorized there will be no further need of accumulating these profits toward the creation of a surplus fund to cover future improvements."

The railroad to the company's mines at Globe, Ariz., was completed early in 1899, and production is now going on. With the acquisition of the newly acquired property more extensive development is expected. Both oxide and sulphide ores have characterized the deposits at the Old Dominion, and the reserves in the mine are understood to be equal to a handsome copper output for years to come. Globe was at one time 140 miles from the railroad, but with the railroad terminus right to the property the problem of transportation facilities has been finally satisfactorily solved, and the company is thereby placed in a position to obtain the necessary fuel supplies and ship its output on terms much superior to those formerly existing. During the three years of 1891, 1892 and 1893 the Old Dominion produced in the aggregate over 22,000,000 pounds of fine copper, so that the outlook for this property under the improved conditions is undoubtedly very encouraging indeed.

The Old Dominion output for a series of years is as follows:

Year.	Pounds Fine.
1893	7,665,293
1894	4,839,386
1895	....
1896	5,650,000
1897	2,000,000
1898	1,800,000

Officers of the Old Dominion Copper Mining and Smelting Company are:

A. S. BIGELOW, ***President.***
W. J. LADD, ***Treasurer.***

Office, 199 Washington Street, Boston.

Michigan Copper Mining Company.

This company was incorporated under the laws of the State of Michigan, June 15, 1898, with an authorized capital of $2,500,000, divided into 100,000 shares of the par value of $25 each, of which $10 per share has been paid in.

The company was formed for the purpose of mining copper, etc., and owns about 3,780 acres, and mining rights in other land. The standing timber on the land is estimated at about 800,000 feet. The land is situated in Township 50, Range 39 west, Ontonagon County, Michigan, on the line of the Ontonagon Branch of the Chicago, Milwaukee & St. Paul Railroad, and about 12 miles from Lake Superior. To the northeast are the Mass and the Adventure, and to the southwest the Victoria mines. The property was formerly known as the "Minnesota," which from 1848 to 1864 produced about 16,000 tons of copper from mass and barrel work, but was practically abandoned in 1870 owing to a falling off in the mass and barrel work and a lack of proper stamping facilities. The new company have been confining their attention mainly to what is known as the "Calico lode," on which they are sinking two shafts known as "A" and "B," about 975 feet apart. Shaft "A" has reached a depth of 220 feet, and "B" 280 feet, mostly through ground carrying good stamp copper. At the depth of 200 feet levels were started in both

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directions from each shaft. Both shafts are equipped with shaft houses, engines, compressors, etc., of sufficient capacity to work for several years. The company gave for the property 67,035 shares of stock, and sold 32,965 for $350,000. They state that about $27,000 has been expended on the surface and about $30,000 underground.

In addition to possessing a fully equipped plant capable of opening up the property to a depth of 1,000 feet, with warehouse, blacksmith shop, office buildings, etc., the company on March 31, 1899, had cash on hand over liabilities $276,079.

The following experts reported on the property: Charles D. Lawton, Samuel Brady and J. M. Wilcox.

The shares of the company were listed on the Boston Stock Exchange on June 7, 1899.

The company has on its property nine well defined veins of copper-bearing rock, viz.: The Calico lode (so called from the green, reddish and brown colors which characterize it), the Minnesota North lode, the Minnesota South lode, the Knowlton lode, the Mass lode, the Ogima lode, the Evergreen lode, the South Amygdaloid, and an unnamed amygdaloid lode.

The history of the old Minnesota Mine is a marvelous one. Organized in 1848, it called in from its stockholders $66,000, and paid them in dividends $1,820,000, besides acquiring a large estate, buildings and machinery from the earnings of the property.

It must be borne in mind that all this was done previous to 1863, before railroads were built in the Upper Peninsula;

before the day of machine drills, and when the windlass, hand work and black powder were in use.

It was from this mine that the largest mass of copper ever found in the world was taken, weighing more than 527 tons.

The Minnesota, for the amount of ground stoped, was the richest mine ever worked in the Upper Peninsula; when they encountered poor rock and worked for a time in it they abandoned the work, believing the copper to be exhausted. The records of the old company show that when they stopped work mass copper was again showing in the bottom of two of their deepest shafts, which were less than 1,300 feet deep.

From the time of the closing of the old mine until May, 1898, tributers have been taking copper from old workings in paying quantities.

It is the opinion of prominent mining engineers and experts who have made examinations of this property during the past year that the old mine should be opened at a greater depth. Some of them declare that it will prove to be a bonanza.

The report of the Superintendent of the Minnesota for the year 1864 shows that developments on the Calico lode and South Range veins proved there was a great abundance of rock carrying 2 per cent. to 3 per cent. of copper.

The Michigan began sinking two triple compartment shafts on the Calico lode in July, 1898, and from the time sinking was begun until this writing they have been continuously in excellent stamp rock.

The Commissioner of Mineral Statistics for the State of Michigan, in his report dated May 1, 1897, said regarding the value of the company's veins on the South Range:

"Upon the South Range, or Evergreen, are the Ridge, Knowlton, Ogima, Evergreen, Adventure, Merrimac, Belt and others; about one-half mile separates them. Both of these ranges have shown excellent copper ground, and at no place has the depth necessary to thorough exploration been reached. Where the deepest shafts of Ontonagon County are from 600 to 1,000 feet deep, those of Houghton are five times this depth, and are showing ground rich in copper. This but goes to prove that there may be far richer territory to be had in the Ontonagon properties by sinking than was revealed near surface. Lodes that were so abundant in copper near surface are certainly worth following to a far greater depth than has yet been here reached, and I know of no place where there is more to warrant the liberal expenditure of money in the hope of finding paying mines of copper than in the Ontonagon district. With copper at its present price, and with the great amount of idle capital throughout the country, there is every reason why those directly interested in Ontonagon's mines should endeavor to consolidate their properties, placing a reasonable price upon them, in the hope of attracting favorable attention to them. The county, which was among the first to be given attention in the mining of its copper, has plenty of metal yet to be extracted. It is still rich in copper, and all that is needed to prove this is actual explorations and development of its principal lodes."

The company has six veins extending nearly one and a half miles on the length of its property on the South Range, five of which parallel each other and are on a strip of land 800 feet wide, which they purpose opening up in April.

The Chicago, Milwaukee & St. Paul Railroad runs through the property, and the Ontonagon River flows by it; distance to Lake Superior, 12 miles.

The work at the Michigan is being carried on under the direction of Samuel Brady, M. E., the company's Superintendent.

Officers of the Michigan Copper Mining Company are as follows:

President:
JOHN STANTON.

Vice-President:
JOSEPH E. GAY.

Treasurer:
JOHN R. STANTON.

Secretary:
J. WHEELER HARDLEY.

Directors:
JOHN STANTON, JOSEPH E. GAY,
JOHN R. STANTON, J. WHEELER HARDLEY,
ALFRED M. LOW, of Michigan.

Principal Office:
11 and 13 William Street, New York, N. Y.

Transfer Office:
American Loan and Trust Company, Boston.

Place of Registration:
Old Colony Trust Company, Boston.

Central Mining Company.

This mine was operated during part of last year, but the management came to the conclusion that further work could not be carried on without running the company into debt, or assessing stockholders, so the mine was closed down July 20, 1898. The stamp mill ran until August 6. The production of mineral in 1898 was $188\frac{1485}{2240}$ tons, which yielded about 77 per cent., or 291,339 pounds of refined copper. The Central began operations in 1854, and for a long time was very successful, as dividends amounting to a total of $1,970,000 attest. The company owns about two miles of improved ground on the "Mineral Range," and there is the hope that at some future time a paying mine may be opened up on the property.

Assets and liabilities, December 31, 1898, exclusive of real estate and mine plant:

		Assets:
Cash		$6,283 16
Cash at mine		407 59
Copper bill		2,413 32
		$9,104 07
Liabilities:		
Agents' drafts	$500 00	
Indebtedness at mine	1,664 94	
Accounts payable	72 40	
		$2,237 34
Balance of assets		$6,866 73

The Central Mining Company has a capitalization of $500,000 in 20,000 shares of $25 each. The amount paid in is $100,000.

Officers:

President:

JOSEPH E. GAY.

Directors:

JOSEPH E. GAY,	**WM. C. STURGES,**
ROBERT PORTERFIELD,	**JOHN STANTON,**
J. R. STANTON,	**EDWARD A. DAY,**

JAMES DUNSTAN, of Michigan.

Secretary and Treasurer:

JOHN STANTON.

Office 11 and 13 William Street, New York.

Copper Production of the World.

SUMMARY.

In tons of 2,240 pounds fine copper.

Country.	1898.	1897.	1896.	1895.	1894.
North America	254,846	235,181	220,844	188,487	178,365
Europe	89,107	89,939	86,730	84,375	83,780
South America	30,065	25,300	26,340	24,925	26,810
Asia	25,175	23,000	21,000	18,430	20,050
Australia	18,000	17,000	11,000	10,000	9,000
Africa	7,110	7,440	7,450	7,115	6,500
Total	424,303	397,860	373,364	333,332	324,505

Country.	1893.	1892.	1891.	1890.	1889.
North America	162,730	165,825	138,919	125,435	114,669
Europe	81,800	85,182	80,937	80,990	83,898
South America	27,320	29,015	29,015	33,960	31,478
Asia	18,000	18,000	17,000	15,000	15,000
Australia	7,500	6,500	7,500	7,500	8,300
Africa	6,000	5,950	6,020	6,570	7,860
Total	303,530	310,472	279,391	269,455	261,205

United States Exports of Copper by Countries.

FOR FISCAL YEAR ENDING JUNE 30.

Exports of copper from the United States, by countries, as per official Government returns, were as follows:

Exported. Ingots, Bars, Etc	Fiscal Year Ending June 30, 1899. Pounds Fine.	Fiscal Year Ending June 30, 1898. Pounds Fine.	Fiscal Year Ending June 30, 1897. Pounds Fine.
To United Kingdom.......	72,722,558	72,306,274	76,619,993
" France	48,172,635	60,656,376	56,270,720
" Germany	44,600,972	32,898,962	28,553,912
" Other Europe..........	87,938,298	111,431,982	117,469,132
" British N. America....	1,133,038	1,398,565	354,891
" Mexico	266,734	186,545	96,698
" Other countries	152,844	77,937	28,461
Total ingots, bars, etc.....	254,987,079	278,956,641	279,393,807
Copper in Matte reduced at 55 per cent.			
To United Kingdom........	1,985,984	7,251,552	17,198,720
" Germany	....	2,464	....
" Other countries	5,295,136	3,088,624	1,282.512
Grand total 12 months......	262,268,199	289,299,281	297,875,039

The aggregate value of the exports of copper for the twelve months ending June 30, 1899, is returned at $34,916,918, against $31,899,801 for the twelve months ending June 30, 1898, and $32,771,376 for the twelve months ending June 30, 1897. The exports of copper from the United States for the twelve months ending June 30, 1899, are 41,198,282 pounds less than the exports of copper from this country for the twelve months ending December 31, 1898, but are valued at $562,606 more than the latter.

Production of Gold, Silver, Copper and Lead in the State of Montana, from the year 1862 to 1898, inclusive, as represented by the value of same per official returns.

Years.	Gold.	*Silver.	Copper.	Lead.	Totals.	Yearly Increase. Per Cent.
1862–81	$200,000,000	$11,000,000	......	......	$211,000,000	......
1882	2,550,000	4,370,000	$1,539,860	......	8,459,860	......
1883	1,800,000	6,000,000	3,452,960	$326,424	11,479,384	37½
1884	2,170,000	7,000,000	5,386,500	246,326	14,802,826	31
1885	3 400,000	11,500,000	6,779,800	274,350	21,954,150	50
1886	4,422,000	13,849,000	5,761,200	494,132	24,526,332	12
1887	5,978,536	17,817,548	8,853,750	607,662	33,257,496	35½
1888	4,200,253	15,790,736	15,103,946	569,160	35,664,095	7½
1889	3,500,000	19,393,939	13,334,970	456,975	36,685,884	3
1890	3,300,000	20,363,636	16,656,437	675,392	40,995,465	11½
1891	2,890,000	20,139,384	14,377,336	1,229,027	38,635,757	†5½
1892	2,891,386	22,432,323	19,105,464	99,035	45,419,208	18
1893	3,576,000	21,858,780	16,630,958	964,089	43,029,827	†5
1894	3,651,410	16,575,458	17,233,718	730,551	38,191,137	†11
1895	4,327,040	22,886,992	21,114,869	754,360	49,083,261	28½
1896	4,380,671	20,324,877	25,356,541	670,010	50,732,099	3½
1897	4,496,431	21,730,710	26,798,915	928,619	53,954,675	6
1898	5,247,918	19,159,482	26,102,616	809,056	51,319,067	5
Totals,	$262,781,640	$292,192,875	$243,589,840	$10,626,168	$809,190,523	

* Coinage Value. † Decrease.

Production of Copper, including Precious, Metals, in Arizona.

The following tables give the production of gold, silver and copper for the past four years:

Year 1895.

		Value.
Gold	95,072 fine ozs.	$1,965,300
Silver	986,900 "	1,275,990 (coining value.)
Copper	47,953,553 pounds.	4,795,355.30 (est.)

Year 1896.

		Value.
Gold	125,978 fine ozs.	$2,604,200
Silver	1,913,000 "	2,473,378 (coining value.)
Copper	72,934,927 pounds.	7,293,492.70 (est.)

Year 1897.

		Value.
Gold	140,000 fine ozs.	$2,892,400
Silver	1,000,000 "	1,290,000 (coining value.)
Copper	81,530,735 pounds.	8,153,073.50 (est.)

Year 1898.

		Value.
Gold	119,249 fine ozs.	$2,465,100
Silver	2,246,800 "	2,904,954 (coining value.)
Copper	111,183,199 pounds.	12,230,151 (est.)

Parrot Silver and Copper Company.

The control of the properties of this company was transferred during 1899 to the Amalgamated Copper Company, who have assumed the direction of these mines and their appurtenances.

During the year 1898 the company operated the following mines included in their property in Montana: The Parrot, Little Minah and Bellona.

The main shaft of the Parrot is a three-compartment one to the 400-foot level, and four compartments from that down. It has been sunk to a depth of 1,122 feet.

At the Little Minah the main shaft is down 600 feet, of which 200 feet was sunk in 1898. This shaft has three compartments.

The Bellona is a new shaft and has gone down to a depth of 500 feet, all of which was sunk in 1898.

The company have a refinery at Bridgeport, Conn., where their product has been made into Electrolytic copper of an excellent quality. The capacity of the Bridgeport plant is between three and four million pounds of fine copper per month.

The Parrot Company has paid in dividends during the year 1899 to October 12 the sum of $3.90 per share, or

$897,000. The company is capitalized at $2,300,000, divided into 230,000 shares of the par value of $10 each. The property is a valuable one, and has been in operation for the past 19 years. In addition to its copper output of 12,444,828 pounds in 1898, the mines produced a large quantity of silver and considerable gold.

Production of copper by the Parrot for the past seven years in pounds, fine:

Year.	Pounds Fine.
1892	12,438,782
1893	7,791,167
1894	7,469,908
1895	7,257,000
1896	8,045,648
1897	14,824,487
1898	12,444,828

Copper Range Company.

This company was organized in January, 1899, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each. There has been paid in $20 per share in cash. The stock of the company was listed on the Boston Stock Exchange on April 6, 1899, and on that date had $1,210,352.73 in cash in its treasury.

The purpose of the company was primarily to construct a railroad over the copper range in the Lake Superior country. On December 1, 1899, there were 42 miles of main line practically completed, the same running from Houghton, Mich., to a connection with the Chicago, Milwaukee & St. Paul Railroad. Already the company has made large contracts for hauling timber from the South Range to the mines on the North, and also for a general business for the mining companies operating on the South Range.

The company owns some 10,000 acres of land, extending across the Copper range, which may be roughly stated as being embraced in the southeast half of Township 54, Range 35.

Work of an exploratory nature has been in progress on the company's land, and some rich looking ground has been found. In fact the Copper range openings are reported as among the best ever seen on any amygdaloid lode. There are five openings on the lode, with a distance of about 1,000 feet between each, which, advices say, are all in rich copper ground.

Prospecting will continue, and it is expected that extensive developments will ultimately result. The new railroad is expected to be in full running operation before very long, and there is no doubt but that it will stimulate activity and prove a great benefit to the copper district.

The policy of the Copper Range Company will be to organize other mining companies as profitable lodes are developed on its territory, and retain its interest in the same by ownership of stock. The plan is to retain the stock in the treasury of the Copper Range Company, and not to divide it among the stockholders, the idea being to make the Copper Range Company a large and continually expanding enterprise, so that the future development of the mines on its territory shall accrue to the company as a whole.

Officers of the Copper Range Company are as follows:

WILLIAM A. PAINE, *President.*
FREDERICK STANWOOD, *Treasurer.*

Directors:

WILLIAM A. PAINE,
FREDERICK A. GILBERT,
CAMERON CURRIE,
SAMUEL L. SMITH,
JAMES H. SAEGER.

Office, Brazer Building, Boston, Mass.

Exports of Copper.

Exports of copper from the United States by countries, as per official Government returns, were as follows:

FOR CALENDAR YEAR ENDING DECEMBER 31.

Exported. Ingots, Bars, Etc.	Year 1898. Pounds Fine.	Year 1897. Pounds Fine.	Year 1896. Pounds Fine.
To United Kingdom........	88,443,870	64,811,843	65,888,751
" France	53,909,508	59,630,864	53,703,798
" Germany	42,891,345	29,746,200	27,535,951
" Other Europe	104,749,556	122,313,139	111,518,392
" To British N. America..	1,523,505	596,157	419,495
" Mexico	253,975	114,886	135,667
" Other countries	184,146	42,653	21,870
Total ingots, bars, etc......	291,955,905	277,255,742	259,223,924
Copper in Matte reduced at 55 per cent.			
To United Kingdom.......	6,034,336	9,856,000	21,859,376
" Germany	2,464	....	1,232
" Other countries	5,473,776	1,310,848	924,000
Grand total 12 months.....	303,466,481	288,422,590	282,008,532

The total value of the above exports of copper for the year 1898 amounted to $34,354,312, against $31,826,974 for the year 1897, and $30,216,194 for the year 1896.

Butte and Boston Consolidated Mining Company.

Operations were resumed at this well-known Montana property some time ago, and a force of 549 were reported working at the mines last year.

During the year 1898, the mines operated by the company were Silver Bow Nos. 1 and 3, Blue Jay, Berkley, Michael Davitt, and East and West Grey Rock.

The main shaft at Silver Bow No. 1 is down 1,020 feet, and has three compartments. At the 400-foot level stables are fitted up for the horses used for hauling ore to the shaft The animals remain in the mine, and are never brought to the surface. Both high and low grade ore is said to be found in this shaft, where the mineral belt is reported to be from 5 to 50 feet. At the 1,000-foot station there was a Riedler pump with a capacity of 900 gallons per minute, and at the 500-foot level a Palmer station pump supplied 1,230 gallons per minute. There are seven exits from this mine, and connections with Silver Bow No. 2 and the Pennsylvania.

Silver Bow No. 3 shaft was sunk 100 feet in 1898, and is down 375 feet. This shaft has two compartments, and crosscutting and drifting has been done here. The shaft

WM. A. PAINE.

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is sunk on the Harrington placer, and, as is the case elsewhere on the property, the ore found is copper-silver.

East Grey Rock shaft is down 1,600 feet, of which 200 feet was sunk in 1898. There are four exits from this mine and an electric flash-light system in use. A vein of considerable width and value is reported at this mine, yielding copper and silver with a little gold.

West Grey Rock shaft is down a depth of 700 feet from surface, and the ore at this location is also copper-silver. The ledge found at the East and West Grey is said to be the same as that in some of the Anaconda workings, where the Bell ledge crosses the shaft at the 900-foot level at the Anaconda property.

Blue Jay has a shaft down 1,075 feet, of which 200 feet was sunk in 1898. There are two compartments down to the 600-foot level, and from that down there are three. This shaft is on an incline of 75 degrees. The ore bears resemblance to that in the other Butte & Boston mines.

The Michael Davitt shaft is down 210 feet, of which 70 feet is vertical and 140 feet on the incline. There are 14 exits from this shaft, where an extra good supply of air is found.

The Berkley is a new shaft, down 550 feet, all of which was sunk in 1898. There are six exits at this mine. A system of flash-lights is provided, with call bells, and the important benefit of good ventilation.

The Butte & Boston is understood to be turning out quite a product, and with further development will no doubt prove its ability to make a good output at a profit.

The Butte & Boston has a capital of $2,000,000, divided into 200,000 shares of the par value of $10 per share.

The officers of the Butte & Boston Consolidated Mining Company are as follows:

A. S. BIGELOW, *President.*
W. J. LADD, *Treasurer.*

Directors:

A. S. BIGELOW,
GORDON ABBOTT,
W. A. GASTON,
***CHARLES VAN BRUNT,**
LEONARD LEWISOHN,
CHARLES W. WELCH,
EUGENE V. R. THAYER.

Office, 199 Washington Street, Boston.

* Deceased.

Arcadian Copper Company.

This company was organized under the laws of the State of New Jersey in March, 1899, with a capital of $3,750,000 divided into 150,000 shares of the par value of $25 each. It began its corporate existence first on June 22, 1898, when it was organized under the laws of Michigan, with a capital of $2,500,000 in 100,000 shares. Stockholders in the original company were entitled between March 20 and March 25, 1899, to exchange the same share for share for the stock of the Arcadian Copper Company (of New Jersey). The majority of the stock of the Michigan Company was deposited with the American Loan & Trust Company, of Boston, for exchange into stock of the New Jersey company.

The privilege pro rata was given to the stockholders of the original company of taking for $30 per share the remaining 50,000 shares of the Arcadian Copper Company (of New Jersey) in the ratio of one share of the new for each two shares of the old.

The Arcadian started out with 2,880 acres of mineral lands located about a mile south of the Franklin Junior Mine. Sinking and drifting were vigorously pushed. The properties comprise several old mines at Lake Superior, and new acquisitions have been added to the company's holdings this year, so that the available territory for mining purposes is largely increased. There are five shafts, and some of these can be sunk to a great depth on the company's property.

A new stamp mill has been erected to contain three heads, and crushing has begun. There has been a large expenditure of money for machinery and general equipment. The surface plant is fitted up to handle a large output, and with so many lodes upon which to operate, if the veins show up with the usual percentage of copper found at Lake Superior the Arcadian should furnish a good yield of copper.

Officers of the Arcadian Copper Company as originally formed were:

ALBERT C. BURRAGE, ***President.***
SIDNEY CHASE, ***Vice-President.***
CHARLES D. BURRAGE, ***Secretary and Treasurer.***

Directors:

ALBERT C. BURRAGE,
WILLIAM ROCKEFELLER,
WILLIAM A. PAINE,
J. H. RICE,
HENRY H. ROGERS,
NATHAN F. LEOPOLD,
HENRY G. FOREMAN,
CHARLES D. BURRAGE,
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Tennessee Copper Company.

This new company has a valuable group of mines in Tennessee which it proposes to develop on an extensive scale and put in the way of producing copper by modern methods.

The Tennessee Copper Company was organized under the laws of the State of New Jersey, April 26, 1899, with a capital of $5,000,000, divided into 200,000 shares of the par value of $25 per share.

The properties acquired are of a valuable character, and include the Pittsburg and Tennessee mines, besides the London and Burra-Burra property. The new company started with $1,000,000 in cash, and it is understood has also 25,000 shares of the stock in its treasury. It is proposed to develop the property in a thorough manner and put in an equipment sufficient to handle the expected product of 12,000,000 pounds of copper a year. The company had not begun production up to November 15, 1899.

The officials of the Tennessee Copper Company are as follows:

ALBERT C. BURRAGE, *President.*
LEONARD LEWISOHN, *Vice-President.*
ADOLPH LEWISOHN, *Treasurer.*

Directors:

ALBERT C. BURRAGE, ADOLPH LEWISOHN,
LEONARD LEWISOHN, JOSEPH RECHERT,
H. H. ROGERS.

Office, 81-83 Fulton Street, New York.

Incorporating Under New Jersey Laws.

Many large corporations have recently been organized in New Jersey, including the Amalgamated Copper Company, and other new copper mining enterprises. The following are given as among the reasons which appeal most strongly to incorporators in favor of New Jersey as the State in which to organize their companies, viz.:

Stock may be issued for property, and the judgment of the directors as to the value of the property is final and conclusive upon all parties unless fraud in making the valuation can be affirmatively shown; stockholders are not liable for corporate debts; no annual reports of the business are required; there is no limitation on the amount of capital stock; the incorporation may be "for any lawful business or purpose whatever"; only one director need be a resident of the State; the incorporation fee is only 1-50 of 1 per cent. of the par value of the capital stock, and the annual tax is only 1-10 of 1 per cent. of the same value.

The Orford Copper Company.

In the spring of 1878 the Orford Nickel and Copper Company was formed, and procured a charter from the Quebec Legislature. Work was commenced shortly after on the Orford Nickel Mine, and continued until about the close of the year. A furnace was erected to be heated by gas, produced by wood, for treatment of ores, but on account of a rapid fall in the price of nickel, caused by the opening of the new Caledonian Mine, the nickel work was abandoned. Early in the Spring of 1879 the company acquired by purchase what was then known as the Crown Mine, now known as the Eustis Mine. They also leased the mines and works of the Canadian Copper and Sulphur Company, all located at Capelton, Que. The ores in the various mines in this district are pyritic, containing about 40 per cent. sulphur, 4 per cent. copper, and about $3 value gold and silver. The Canadian Company's works were remodeled, and where the wet process had been in use the Orford Company erected a smelting plant. The ore was then roasted in open heaps to get rid of the sulphur. Operations were carried on to the extent of 3,000 tons or more monthly, getting a product of matte containing about 40 per cent. copper, which was shipped to England or Baltimore.

Early in 1880 the Canadian Company canceled their lease. This led to the erection of a smelting plant at what is now known as Eustis Village. This plant was run very successfully for about two years. In the fall of 1881 inquiries were made by one of the largest acid makers near to New York City, as to the purchase of ore for its sulphur value. The negotiations ended in a contract for 1,000 tons monthly. Other acid concerns followed in the same line, and the results were the shutting down of the Canadian smelting plant at Eustis, and the building of what is now known as the Orford Copper Company's works at Constable Hook, N. J. In the year 1882 the name of the company was changed to the Orford Copper and Sulphur Company, that being in line with the business then carried on.

In the year 1887 the company was reorganized into two divisions, one taking the mining interests under the name of the Eustis Mining Company, and the other engaging in manufacturing lines, known as the Orford Copper Company.

At the time the United States decided to use nickel in the manufacture of armor plate for the armored vessels of the navy, the Orford Copper Company put itself in a position to meet the needs of the Government, and established the nickel industry in this country on such a basis that the Government was enabled to get its nickel at the lowest price ever known in the world, and of a very superior quality.

Since this time nickel has been gradually progressing in favor, particularly in its connection with steel. Nickel-steel is now the best known material for boiler plates, shafting, piston and connecting rods, where non-corrodibility is the feature most sought after. Nickel is also much used for handles, wheels, etc., where the moisture of the hand would soon rust other metals.

WORKS OF THE ORFORD COPPER COMPANY AT CONSTABLE HOOK, N. J.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

Nickel is produced at the works of the Orford Copper Company from mattes and ores received both from Canada and New Caledonia, and is placed on the market in the form of oxide and of metallic nickel, such as shot, plaquettes, ingots and bars. The capacity of the present plant of the Orford Copper Company for refining from ores and mattes received from various parts of the United States, Canada, Mexico and abroad is about 6,000,000 pounds of copper and 1,000,000 pounds of nickel monthly.

European Copper Statistics, Foreign Deliveries, and London Sales of G. M. B. Copper.

Stocks of copper in England and France, and afloat thereto from Chile and Australia; foreign deliveries of copper, and reported sales of G. M. B. or "Standard" copper for the months named were as follows, in tons of 2,240 pounds:

Month Ending.	European Visible Supply. Tons.	Total Deliveries All Europe. Tons.	London Sales of "Standard" or G. M. B.'s. Tons
January 31, 1899	26,015	20,785	53,450
February 28, 1899	24,326	15,405	31,600
March 31, 1899	28,497	17,054	47,450
April 30, 1899	26,529	18,073	39,650
May 31, 1899	30,156	16,074	23,800
June 30, 1899	29,004	19,077	18,950
July 31, 1899	33,019	16,327	17,500
August 31, 1899	32,389	18,595	12,125
September 30, 1899	28,328	22,634	14,425
October 31, 1899	26,680	21,300	19,375
November 30, 1899	25,765	19,687	21,600
January 31, 1898	29,746	17,367	18,600
February 28, 1898	29,262	18,156	19,000
March 31, 1898	28,023	20,369	28,375
April 30, 1898	28,891	22,943	20,650
May 31, 1898	27,789	20,467	23,650
June 30, 1898	28,101	18,833	23,625
July 31, 1898	29,861	18,213	18,050
August 31, 1898	28,397	16,666	24,700
September 30, 1898	27,583	21,471	15,500
October 31, 1898	25,798	19,585	24,850
November 30, 1898	26,897	19,241	31,050
December 31, 1898	27,896	21,640	22,800

EUROPEAN COPPER STATISTICS—CONTINUED.

Stocks of copper in England and France, and afloat thereto from Chile and Australia; foreign deliveries of copper, and reported sales of G. M. B. or "Standard" copper, for the months named were as follows, in tons of 2,240 pounds:

Month Ending.	European Visible Supply. Tons.	Total Deliveries All Europe. Tons.	London Sales of "Standard" or G. M. B.'s. Tons.
January 31, 1897	32,307	18,307	24,425
February 28, 1897	30,859	14,879	18,900
March 31, 1897	33,224	17,552	22,875
April 30, 1897	33,793	19,026	17,200
May 31, 1897	33,688	19,445	21,425
June 30, 1897	32,637	19,031	14,250
July 31, 1897	34,004	20,297	18,850
August 31, 1897	33,267	20,396	15,700
September 30, 1897	33,759	17,641	17,625
October 31, 1897	34,389	20,933	20,000
November 30, 1897	33,091	17,661	19,075
December 31, 1897	31,955	19,528	14,225
January 31, 1896	46,128	15,328	32,850
February 28, 1896	43,481	15,088	36,525
March 31, 1896	39,980	20,935	31,425
April 30, 1896	38,446	18,960	24,075
May 31, 1896	36,901	17,812	28,975
June 30, 1896	36,279	15,425	38,775
July 31, 1896	34,199	19,467	25,325
August 31, 1896	35,374	17,936	24,350
September 30, 1896	34,089	17,753	19,350
October 31, 1896	35,441	16,020	25,925
November 30, 1896	34,779	20,915	27,475
December 31, 1896	34,927	21,427	19,825
January 31, 1895	54,848	12,656	9.650
February 28, 1895	55,190	8,369	11,350
March 31, 1895	53,335	12,011	11,450
April 30, 1895	54,239	12,102	17,075
May 31, 1895	54,211	9,703	51.150
June 30, 1895	58,182	15,978	20,550
July 31, 1895	57,817	12,542	30,175
August 31, 1895	55,432	12,622	28,450
September 30, 1895	52,843	11,060	21,100
October 31, 1895	50,383	13,579	32,075
November 30, 1895	45,731	14,827	27,850
December 31, 1895	45,817	14,527	20,850

The Santa Fe Gold and Copper Mining Company.

The Santa Fé Gold and Copper Mining Company was incorporated January 21, 1899, under the laws of the State of New Jersey, with a capital stock of 250,000 shares of the par value of $10. The company began with $500,000 cash and 25,000 shares of stock in the treasury.

There are some 35,000 acres or more in all belonging to the company. The mines are located in New Mexico, and many mineral veins outcrop on the property. The mines of the old Santa Fé Copper Company were sold in 1892 under foreclosure proceedings, and were purchased by Mr. Leonard Lewisohn. The capital of the old company was $5,000,000 in 500,000 shares of $10 par, and there existed $300,000 in bonds and a large floating debt.

During the period that the property was closed down Mr. Lewisohn expended large sums of money in perfecting title and settling claims against the company. In organizing the new company stockholders in the old company were given the privilege of subscribing for stock in the new company by surrendering their old stock and receiving one share of stock in the new organization for five shares in the old company and the payment of $5 per share on each share of new stock. As the shares of the old company sold as high as $2.50 per share before the reorganization was complete, holders of the original shares had the opportunity of selling their stock if they did not desire to exchange it for shares in the present company on the terms laid down under the reorganization plan. There was a very large demand for the new shares, and the new company has been successfully started on its career. Of the $500,000 cash with which the new company started there is still over $450,000 in the treasury, in addition to the 25,000 shares of treasury stock, and recent developments at the property are of an encouraging character. A party having a thorough acquaintance with this mining property stated some time ago that there was about 1½ ounces of gold in a 45 per cent. copper matte from this property, which would be equivalent to about 2½ ounces of gold to the ton of pig copper, and that it is calculated that the Santa Fé will be able to show $65 worth of precious metals to the ton of copper. Independent estimates by two prominent engineers show the cost of copper laid down at New York to be about 7 cents per pound, so that from these calculations the Santa Fé Gold and Copper Mining Company should be in position, when smelter is started, to earn good profits.

After a visit to the mines last Summer an official of the company stated as follows:

"The Santa Fé is a mountain of copper, with mineral all through it running from 3 per cent. to 30 per cent. copper, with silver and gold.

"The only work done so far has been to connect the shaft with the old workings, so as to give plenty of room to care for the ore. This work should be finished within a week, when a regular plan of development will be carried out. We have been in good ore from the start. There are half a dozen other openings through the mountain, all of which show very rich in copper and gold, and only await development. In addition we have thousands of acres of good placer ground, so rich that it was worked by means of fanning process, but when dredging has been more perfected we will be able to work it to advantage. We have about 30,000 tons of ore on the dump running 3 per cent. to 4 per cent., left over from previous operations, which could not then be profitably worked. We have about 40 men at work, all that can now be accommodated."

Plans for a smelter are now being prepared.

The officers of the Santa Fé Gold and Copper Mining Company are as follows:

EDWARD A. CLARK, *President.*
CHARLES H. COLE, JR., *Treasurer.*
F. W. BATCHELDER, *Secretary.*

Directors:

ALBERT S. BIGELOW,
CHARLES H. COLE, JR.,
LEONARD LEWISOHN,
EDWARD A. CLARK,
WILLIAM H. COOLIDGE,
J. T. McLAUGHLIN,
CHARLES H. COLE,
CHARLES S. HENRY,
EDGAR BUFFUM.

Principal Offices, 8 Congress Street, Boston, and Jersey City, N. J.
Transfer Office, 8 Congress Street, Boston.
Place of Registration, Globe National Bank, Boston.

Old Colony Copper Company.

In the Summer of 1898 explorations were begun in Sections 17 and 18, Township 56, Range 32, in Houghton County, Michigan. The result of these explorations was the discovery of 10 new and untried lodes. Six of these lodes carried copper at the surface. The showing was so good that the St. Mary's Canal Mineral Land Company and the Union Copper Land and Mining Company put 1,200 acres of their land together to form what is now known as the Old Colony Copper Company. Work was continued on one of the lodes during the Winter of 1898-99, with gratifying results. Two shafts have been sunk, one about 500 feet deep and the other about 150 feet.

In May, 1899, a tunnel was started at the line of the eastern sandstone to crosscut all the lodes running through this property. This tunnel, at a distance of about 200 feet from the sandstone, ran into a very rich amygdaloid lode, which is full of heavy copper and stamp rock. Lying directly on top of this lode is a conglomerate, which is also very rich. Although the showing in No. 1 and No. 2 shafts on the west lode has proved to be very good, this remarkable discovery in the tunnel will undoubtedly change all the plans of the management, and the eastern end of the property will be made the principal basis of operations in the future. For many years Lake Superior residents have believed that a rich conglomerate lay east of the Calumet & Hecla, and if this discovery on Old Colony continues as rich as it now is it will prove to be one of the most remarkable discoveries ever made at Lake Superior. The progress, therefore, of this tunnel will be watched with great interest.

The Old Colony also owns a mill site on Torch Lake. Capital of the company is $2,500,000 in 100,000 shares.

The officers of the company are as follows:

H. F. FAY, ***President.***
W. B. MOSMAN, ***Sec'y and Treas.***
Address, 60 State Street, Boston.

Directors:

H. F. FAY,	**W. B. MOSMAN,**
JOHN C. WATSON,	**WILLIAM HOWELL REED,**
STEPHEN R. DOW,	**CHARLES M. BAKER,**

JAMES CHYNOWETH, of Michigan.

OLD COLONY COPPER COMPANY.

Organized in December, 1898, having in the treasury....	**$300,000**
Expended for machinery, boilers, buildings, roads, underground development, supplies, etc., together with a mill site on Torch Lake........................	**125,000**
Cash balance on hand, October 1, 1899............	**$175,000**

Elm River Copper Company.

This is a new company, organized in the Spring of 1899, under the laws of the State of New Jersey, with a capital of $1,200,000 divided into 100,000 shares of the par value of $12 each, fully paid and issued. It owns about 2,500 acres of land on what is known as the South Range, and comprises the whole or part of Sections 1 and 2, 11 and 12, in Township 52, Range 36, and Section 6 in Township 52, Range 35, and Section 36 in Township 53, Range 36. It also owns a mill site on Lake Superior.

The lands of this company are favorably located in the center of the Copper Range.

Two copper-bearing lodes have been uncovered there upon which several pits have been sunk and three shafts started, two upon what is supposed to be the Winona lode and one on a lode further west. These openings have made a very good showing of copper, and much is expected at depth. Work was begun there in June, 1899, and the mine is already in an advanced state of development. Already a town site has been laid out, mine buildings erected, a saw mill is in place and furnishing lumber for the mine and its buildings. The work is being pushed with great rapidity, although done at the disadvantage of being 22 miles from Houghton. All its supplies have to be teamed over the road at present, but with the coming of the new

Copper Range Railroad this Fall, which crosses the property very near the mine location, its development will be much more rapid. Another year ought to show the Elm River Mine well advanced toward the success it is expected to make on account of its favorable location on the Copper Range. Explorations are being carried on with the diamond drill to definitely locate several other valuable lodes known to cross the property. With its strong financial position and the energy which characterizes its management much is expected of this property.

The officers are as follows:

H. F. FAY, ***President.***
W. B. MOSMAN, ***Sec'y and Treas.***
Address, 60 State Street, Boston.

Directors:

H. F. FAY,		**STEPHEN R. DOW,**
JOHN C. WATSON,		**W. B. MOSMAN,**
	CHARLES N. KING.	

ELM RIVER COPPER COMPANY.

Organized in April, 1899, having in the treasury........	**$600,000**
Expended for machinery, boilers, buildings, roads, underground development, supplies, etc..............	**85,000**
Cash balance on hand, October 1, 1899............	**$515,000**

HON. T. B. DUNSTAN.

EX-LIEUTENANT GOVERNOR OF MICHIGAN.

Victoria Copper Mining Company.

This company was incorporated January 16, 1899, under the laws of the State of Michigan, with an authorized capital of $2,500,000, divided into 100,000 shares of the par value of $25 each. There has been paid in $7 per share in cash.

The company was organized for mining, smelting and manufacturing copper. Their land is situated in Township 50, Ontonagon County, Michigan, on the Ontonagon River and its west branch, and is about three miles west of the village of Rockland, and about a mile from the railroad. It contains about 2,009 acres, all within the mineral belt. A short distance northeast are the following mines: National, Michigan, Mass and Adventure, and southwest is the old Tremont Mine.

Mr. B. F. Chynoweth, in his report on the property, says its position is most favorable for intercepting all the mineral belts that have been opened in the district; the range passes through in a northeast and southwesterly direction, dipping toward the northeast at an angle of about 56 degrees. The first mining in the copper district of the State was upon this property. Five shafts have been sunk, the deepest being 300 feet; four of them are connected by levels, and old maps show that considerable stoping has been done. The present equipment consists of a double hoisting engine, two boilers of 160 horse-power, an air compressor of

12-drill capacity, and a full assortment of pumps, tools, etc. Suitable buildings are nearly erected. On the west branch of the Ontonagon River the company own a valuable water-power, estimated to be at least 5,000 horsepower, which they expect to utilize in the future.

The following financial statement of the company bears the date of May 10, 1899.

Paid for property	$352,480.77
Paid for miscellaneous expenses	18,944.43
Cash in banks	330,142.10
	$701,567.30
Received from subscription	$700,000.00
Received from subscription interest	1,567.30
	$701,567.30

The stock was listed on the Boston Stock Exchange June 7, 1899.

Officers of the Victoria Copper Mining Company are as follows:

THOMAS B. DUNSTAN, *President.*
CALVIN AUSTIN, *Vice-President.*
JAMES P. GRAVES, *Sec'y and Treas.*

Directors:

THOMAS B. DUNSTAN,
CALVIN AUSTIN,
WILLIAM F. HUMPHREY,
FRED H. WILLIAMS,
FRED H. BEGOLE.

Principal Office, Room 539, 53 State Street, Boston.
Place of Registration, Massachusetts National Bank, Boston.
Transfer Agent, James P. Graves, 53 State Street, Boston.

Trimountain Mining Company.

This company owns 1,120 acres of land in Sections 19 and 20, 29 and 30, Township 54, Range 34, Houghton County, Michigan. These lands are south of Houghton and join the Baltic Mine. It was organized in the Spring of 1899, and as soon as the snow was off the ground explorations were begun on this property. Through the use of a diamond drill the lode which was found so rich on the Copper Range lands was located on the Trimountain property. It was struck first at a distance of 300 feet from the surface on the plane of the lode. A second diamond drill hole located the lode at a depth of 100 feet on the plane of the lode. By sinking through sand a distance of 27 feet the lode was uncovered at the surface. The diamond drill cores were very rich in copper, and the showing at the surface was remarkable, as the lode was well charged with heavy copper from foot to hanging. This is supposed to be the Baltic lode, although it cannot be fully determined until it has been further investigated.

Although on the South Range, which is only now being developed, much is expected of this mine, as it has been proved to lie in a region rich in copper.

A great factor in its development will be the Copper Range Railroad, which is now being built to serve all the mines on the range south of Houghton.

The Trimountain also owns a valuable mill site on Portage Lake. Capital of the company is $2,500,000 in 100,000 shares.

The officers of the company are as follows:

H. F. FAY, ***President.***
W. B. MOSMAN, ***Sec'y and Treas.***
Address, 60 State Street, Boston.

Directors:

H. F. FAY,	W. B. MOSMAN,
JOHN C. WATSON,	WILLIAM HOWELL REED,
STEPHEN R. DOW,	EDMUND S. CLARK,

JAMES CHYNOWETH, of Michigan.

TRIMOUNTAIN MINING COMPANY.

Organized in February, 1899, having in the treasury....	$400,000
Expended for machinery, boilers, buildings, roads, underground development, supplies, etc., together with a mill site on Torch Lake........................	45,000
Cash balance on hand, October 1, 1899...........	$355,000

Mayflower Mining Company.

This company was organized in the Spring of 1899, under the laws of the State of Michigan, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each. Its lands are located just north of the Old Colony Copper Company. It owns 840 acres in Sections 7 and 8, Township 56, Range 32, Houghton County, Michigan. It is crossed by the same lodes as the Old Colony, and as the management is in the same hands they will be worked together for their mutual benefit. The crosscut tunnel which has been started on the Old Colony lands will also "prove up" the Mayflower lands.

The company also owns a mill site on Torch Lake.

Its officers are as follows:

H. F. FAY, *President.*
W. B. MOSMAN, *Sec'y and Treas.*
Address, 60 State Street, Boston.

Directors:

H. F. FAY,
JOHN C. WATSON,
STEPHEN R. DOW,
W. B. MOSMAN,
MANNING EMERY,
JAMES CHYNOWETH.

MAYFLOWER MINING COMPANY.

Organized in May, 1899, having in the treasury..........	**$300,000**
Expended for machinery, boilers, buildings, roads, underground development, supplies, etc., together with a mill site on Torch Lake........................	**70,000**
Cash balance on hand, October 1, 1899..........	**$230,000**

The Baltic Mining Company.

The Baltic is a new Lake Superior mine of much promise, and has recently entered the list of producers. The company was organized in November, 1897, and owns a territory comprising 800 acres of land south of the Atlantic Mine. The property was bought from the St. Mary's Canal and Mineral Land Company for $1,000,000, and the company organized with a capital of $2,500,000, divided into 100,000 shares. Two assessments of $1 each per share were called in 1898 to carry on explorations, and another of $3 per share this year, which makes $15 per share paid in. The lode found on the Baltic property has the peculiarity of having a dip of 72 degrees, and is trap and amygdaloid. There are three shafts in operation, and the openings show copper in paying quantities.

The impression prevails that the Baltic is destined to become an important producer. Recent reports state that the rock taken from the mine in October, 1899, from a small cutting-out stope showed an average of 30 pounds of copper per ton stamped, or 1½ per cent. mineral.

The lode on the Baltic is a new discovery, and not worked at any other point, until this company began operations. The opening of the mine by sinking shafts and driving levels has progressed satisfactorily, and the Baltic is now said to be paying expenses and earning a snug sum besides, after charging the cost of development work to operating expenses.

F. McM. STANTON.

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TILDEN FOUNDATIONS.

There are six shafts on the property, and the total sinking done last year was 498 feet. Drifting was also done to the extent of 2,602 feet in 1898, and the Baltic is now sending rock to the Atlantic stamp mill, where one head of stamps is used to crush the Baltic product.

The Baltic lode is of unusual width, and said to vary from 20 to 50 feet. "'Like nearly all of the copper-bearing amygdaloids," says Superintendent F. McM. Stanton, "the deposit is irregular both in width and productiveness. The character of the rock itself and the form in which the copper occurs also vary greatly. In No. 1 shaft and in the drifts and crosscuts near the shaft the copper occurs almost exclusively in pieces of considerable size, or what is known as 'barrel work.' The openings at No. 3 shaft show other conditions. The character of the rock is different, and the copper is disseminated more uniformly through it. Very little 'barrel work' is found, but the rock on the whole apparently carries more copper than that taken from No. 1 shaft. The ground in No. 4 and No. 5 shafts resembles that found in No. 3, but thus far has not seemed to be quite so productive."

Machinery and equipment has been installed at four shafts and quite a number of buildings erected on the property. Shafts No. 3, No. 4 and No. 5, which are 10 by 24 feet, with three compartments, are located for permanent work. A new shaft south of the temporary No. 1 shaft has been recently started. This new shaft had to go through 40 to 60 feet of sand, but has encountered the lode, and reports say it has been found heavily charged with copper.

The company expended last year for sinking shafts, construction, machinery, and other mine expenditures $129,406.86. Total expenditures for all purposes during 1898 amounted to $160,528.12. Net available surplus on December 31, 1898, was $43,016.38.

Officials of the Baltic Mining Company are as follows:

JOHN STANTON, *President.*

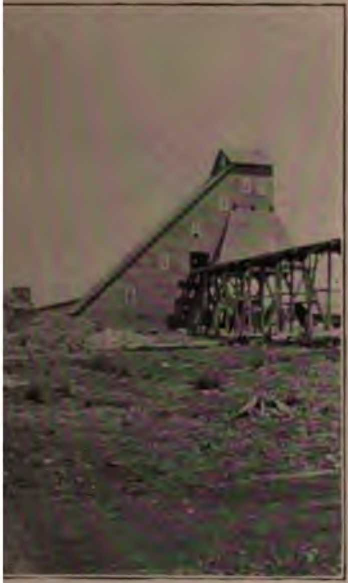
Directors:

JOHN STANTON,	JOSEPH E. GAY,
J. R. STANTON,	WM. C. STUART,

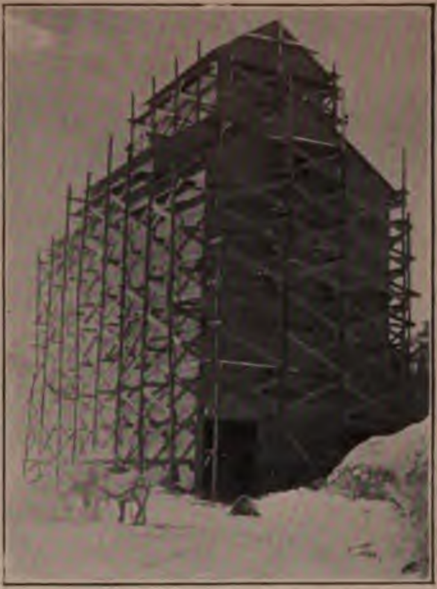
CAMERON CURRIE, of Michigan.

J. R. STANTON, *Secretary and Treasurer.*

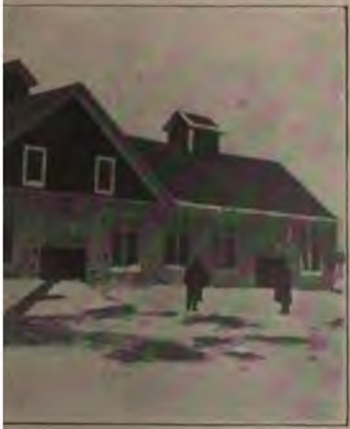
Office, 11-13 William Street, New York.



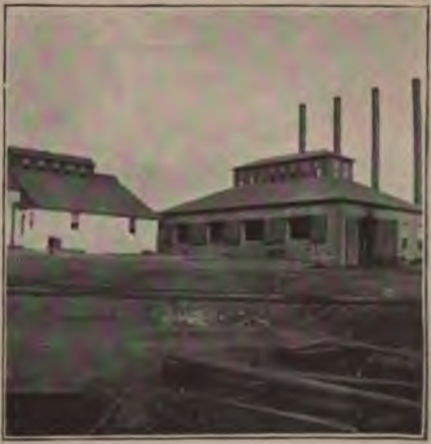
HAFT HOUSES, ATLANTIC MINE.



BALTIC MINE SHAFT HOUSE.



IST AND COMPRESSOR HOUSE,
WOLVERINE MINE.



800 H. P. BOILER PLANT, NEAR D SHAFT,
ATLANTIC MINE.

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DATIONS.

The Mass Consolidated Mining Company.

This company has been recently organized with a capital of $2,500,000, divided into 100,000 shares. The consolidated company covers the Ridge, Mass, Merrimac, Hazard and Ogima properties, comprising about 2,100 acres of mineral land, admirably located in Ontonagon County, Mich., and is in the centre of the copper range. The old Mass and Ridge mines in former years produced considerable copper, amounting to thousands of tons, and paid $1,920,000 in dividends. Several shafts had been sunk on these properties years ago, and consequently less development work is necessary now, thus placing the new company at a decided advantage.

The present management has commenced active operations, and the work of sinking shafts and opening up the property is progressing in vigorous style. No. 3 shaft has been partially retimbered to the 71-foot level and an additional 100 feet sunk. From an exhaustive report on the property by E. A. Wetmore, M. E., we make the following extracts:

"In looking over the old books and accounts of the different companies, I was fortunate enough to find data of actual work extending over a number of years, which give this result (the percentage of mineral in the rock) in a satisfactory manner. In these old statements of the Ridge Mine (now Mass), each year is given the total number of cubic fathoms of ground broken for the year in shafts, drifts, stopes, etc., also the total number of pounds of 'mineral' produced, 'mineral' being the unsmelted copper of all kinds.

"A cubic fathom of copper rock will weigh approximately 14 to 15 tons, so by dividing the average number of pounds of 'mineral' in a cubic fathom by 14 we get accurately enough the percentage of 'mineral' to the ton of rock, and taking 75 per cent. of this (the percentage of ingot copper in 'mineral') we will have the percentage of copper in the rock. Thus in 1869 we find the percentage of copper to be 2.31 per cent.; in 1870, 2.70 per cent.; in 1872, 1.96 per cent.; in 1873, 1.65 per cent.; in 1876, 2.62 per cent.; in 1877, 2.25 per cent.

"In the old Mass reports the percentage appears to be a fraction lower. In the year 1881 the data is given the same as the Ridge reports, and we get 2.32 per cent., about the same as the Ridge."

Of the development plans of the Mass Consolidated Company Mr. Wetmore says: "Two three-compartment shafts, about 1,000 feet apart, are to be sunk on the Evergreen lode immediately. With the aid of the old workings these shafts should be down 500 feet in the next six months. From these shafts crosscuts will be run through the other four lodes to the Knowlton, and later shafts will be sunk on the Knowlton and crosscuts extended back to the Evergreen.

"Thus the company will work all five lodes simultaneously, and it will be the only mine in the Michigan copper district working as many as five lodes at the same time."

The shares of the Mass Consolidated Mining Company were listed on the Boston Stock Exchange April 18, 1899.

The following are the officers of the company:

EDWARD E. FLOYD, *President.*
CHARLES H. BENNETT, *Treasurer.*

Directors:

EDWARD E. FLOYD,
S. D. WHITTEMORE,
SYDNEY HARWOOD,
J. WALTER DAVIS,
A. B. TURNER,
A. MATTHEWS,
F. H. BEGOLE,
THOMAS F. COLE,
SAMUEL MITCHELL.

Office, 16 State Street, Boston, Mass.

United Verde Copper Company.

The mines and works of this company are located at Jerome, Ariz. The property is wonderfully rich in its mineral resources, and operations have yielded magnificent profits to the owners.

The produce from the United Verde mines last year was returned at 42,328,992 pounds of copper, or more than twice as much as the production in 1895, and nearly four times as much as that for 1892.

The capacity of the plant was enlarged within the past few years, and the underground workings could furnish ore enough for a smelting plant of still greater dimensions.

Figures of production by the United Verde Copper Company for the past six years are as follows:

Year.	Pounds Copper.
1898	42,328,926
1897	31,355,025
1896	22,327,950
1895	16,491,402
1894	10,904,453
1893	9,121,146

There is a handsome percentage of gold and silver ore in the United Verde mines, and the value of the precious metals brings down the cost of copper to a very low figure.

The capitalization of the company is $3,000,000, divided into 300,000 shares of the par value of $10 each.

The officials of the United Verde Copper Company are as follows:

W. A. CLARK, ***President.***
JAS. A. MACDONALD, ***Vice-President.***
J. C. KENNEDY, ***Secretary and Treasurer.***
Office, 43 Cedar Street, New York.

The Adventure Consolidated Copper Company.

This company covers the Adventure, Hilton and Knowlton mines, located in Ontonagon County, Mich., and is in the centre of the Copper Range.

The Adventure Mine comprises 780 acres; the Hilton 320 acres, and the Knowlton 406 acres, making a total of 1,506 acres, all on the Mineral Range. The Knowlton has also the surface right to 200 acres.

The company was organized last year under the mining laws of Michigan with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 per share. There has been paid in on the stock $5 per share. The company's shares were listed on the Boston Stock Exchange, December 13, 1898.

All known veins or lodes of any promise that have been worked on this part of the Copper Range (except the Minnesota Mine veins) run across this property. All these veins are embraced within a strip of about 1,100 feet in width, according to Captain S. B. Harris, the most southerly one being the Evergreen, and the most northerly one the Knowlton vein. Between these are the Butler or Champion, the Mass, the Ogima stamp vein, and one or two others. These properties were all operated many years ago, and considerable copper obtained before the modern methods of to-day were in vogue.

The new company has an extensive territory in which to operate, and there is no doubt about their possessing the copper-bearing veins, so that there is good reason to expect encouraging developments in the future at this property.

At a depth of about 600 or 700 feet from No. 1 shaft, near the western boundary, the lands of the Adventure lengthen to the westward and reach around under the Mass Mining Company's property for a length of one-half mile. This gives it at that place two miles of several belts.

A leading director of the company expresses the conviction that with wise, conservative management along modern lines, the Adventure would soon take high rank among the other productive properties of the great Lake Superior mineral district.

The several veins on the Adventure and Hilton run parallel with each other. The Mass is south of the Knowlton vein, about 140 feet; it is about 300 feet between the Mass and the Butler or Champion vein; 100 feet between the Butler or Champion and the Ogima vein, and 230 feet south of the Ogima lies the Evergreen. The distance between the extreme north vein and the extreme south vein thus far discovered is therefore not very great, about 770 feet, possibly a little more, and admits of the operation of all the lodes by the same surface plant, thus affording unparalleled advantages in hoisting, breaking and handling rock.

Our latest information on this property is under date of November 11, 1899, and was to the effect that work was progressing very satisfactorily in the three shafts thus far opened on the property, the showing on the Knowlton vein and also in the adit driven on the Butler vein being exceedingly rich. Not only have they the usual stamp rock, but more or less mass and barrel work.

To the west of the Mass Mine the Adventure owns 406 acres in addition to its other property, and several lodes outcrop near the southern boundary.

The following are the officials of the Adventure Consolidated Copper Company:

*THOMAS F. MASON, *President.*
T. HENRY MASON, *Vice-President.*
WILLIAM R. TODD, *Secretary and Treasurer.*
W. A. O. PAUL, *Assistant Treasurer.*

Directors:

* THOMAS F. MASON,	CHARLES J. DEVEREUX,
THOMAS B. DUNSTAN,	WILLIAM R. TODD,
T. HENRY MASON,	ISAAC H. MESERVE,

HENRY A. WYMAN.

Office, 45 Broadway, New York.
Transfer Office, Old Colony Trust Company, Boston.
Place of Registration, American Loan and Trust Company, Boston.

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* No successor had been elected to fill the vacancy caused by Mr. Mason's death up to November 1, 1899.

1. ADVENTURE MINE.

2. QUINCY MINE.

Union Copper Mining Company.

The following official statement, under date of October 18, 1899, is from the President of the company, and contains an interesting description of this property, which has lately come into prominent notice:

"The Union Copper Mining Company's mines are situated fifteen miles from Salisbury, N. C., in Rowan and Cabarrus counties, two miles from Gold Hill, N. C. The Southern Railroad has built a spur into the mine two miles and a half, which is nearly all a double track. The Union Mine comprises 1,150 acres of mineral-bearing land, well timbered and watered. It has one vein known as the Big Cut copper vein, which extends for a mile and a half through the property. It also has twelve other distinct copper, gold and silver bearing veins in addition to a very rich galena vein which runs very high in lead. The company has 2,700 men on the pay roll, and they are working ten different shafts on the Big Cut copper vein. Each shaft is a mine within itself. being thoroughly equipped with hoisting engines, boilers, air drills, pumps and tracks, which carry the ore from each of the ten shafts to the concentrating plant and smelter which is in course of construction.

"The company is to-day producing over 300 tons of copper ore per day, which averages over 10 per cent. in copper, from $1.50 to $7.50 a ton in gold, and from 3 to

30 ounces per ton in silver. There is in sight to-day over 1,000,000 tons of 10 per cent. copper ore, as these ten shafts are sunk to a level of over 150 feet on an average. The Big Cut vein produces also, from two shafts, native copper in shipping quantities. The width of the Big Cut vein in its widest point is 163 feet and 60 feet in the narrowest part. In addition to these ten shafts there are three other shafts thoroughly equipped on a gold vein that runs very high in gold, which is free-milling. In addition to the gold vein there is a shaft on the silver vein sunk to 110 feet, where we are taking out to-day from 35 to 60 tons per day of silver ore that runs from 102 to 1,500 ounces of silver to the ton. The company is free of debt, and has money enough on hand to-day to run the mine for many years, even though it fails to produce a dollar's worth of ore.

"The company is shipping just enough ore at the present time to pay the running expenses and a little over, piling the remainder to be treated later on the mine. There is now fully 50,000 tons of 10 per cent. copper ore on the dumps. There is an electric light plant which lights up the mine underground night and day and above ground at night, working three shifts of eight hours each in every twenty-four hours. There are three large duplex air compressors that run 36 air drills, 27 large boilers, 16 of which are 100 horse-power boilers. There are 18 hoisting engines, a saw mill that saws 25,000 cubic feet of lumber per day, blacksmith shop 40 by 60 feet, with three large forges; a machine shop 45 feet by 75 feet, with all the modern appliances for making a steam engine if necessary; also a brass and iron foundry for making such castings as may be needed. There are four large dams with water enough to run the concentrators and smelters for ninety days without rain. By the first of October the company will have completed one of its five concentrator plants, which will concentrate 180 tons of copper ore a day. In addition to this there is a large smelter going up which will be arranged so that the company can either use one or five of the 100-ton smelters as the case may require. The company has never offered any stock on the market for sale, it being all subscribed by the promoters. There is to-day over $600,000 worth of machinery on the property.

"The company is incorporated for $3,000,000 of 300,000 shares at $10 a share, par value. In conclusion, I will say that this mine is the most complete mining camp in the world to-day, so far as machinery is concerned, and will be producing 1,000 tons of 10 per cent. copper ore per day by January 1, 1900, and that the silver shaft alone to-day pays the running expenses of the entire mine, leaving the rest of the workings clear profit. The assay office on the mine is the most complete one in the world.

"In addition to the above, there are 127 dwelling houses on the property that will accommodate 3,000 people; a large office building in the centre of the property, and where every shaft on the mine is visible from the office; a large three-story hotel with 52 rooms for the accommodation of the executive forces of the mine. There are also two large stables that will accommodate 400 horses and mules."

Officers of the Union Copper Mining Company are as follows:

W. G. NEWMAN, *President.*
WM. M. BUTLER, *Treasurer.*
Office, 80 Broadway, New York.

Helvetia Copper Company.

The Helvetia Copper Company includes 43 claims, containing more than 800 acres of mineral land in the Helvetia mining district, 31 miles southwest of Tucson, Ariz. The mines have been producing copper since 1881, but only in a small way and under great disadvantages. There are a great many openings on the property, from most of which ore has been shipped.

The mine is capitalized under the laws of New Jersey at $5,000,000, divided into 200,000 shares of the par value of $25 each. The company began business in 1899 with $500,000 in cash and 42,500 shares of stock in its treasury.

Recent reports from the property are of a most encouraging nature, and state that large quantities of ore are ready for the new smelter as soon as it is started. Advices from the Helvetia smelter in November, 1899, were to the effect that everything about the smelter was in perfect running order, steam having been turned on October 23. The management was delayed, however, by the non-arrival of their cars and a quantity of timber to be used in making trellis on the railroad. A railroad has been constructed from the mine openings to the smelter which will convey the ore to the smelter by locomotive and cars. Information November 21 stated that the missing material will be delivered so that the smelter will start on or before December 1, 1899.

The showing of copper ore from these claims gives indication of the remarkable richness and variety of the samples. Ore bodies of sulphide and carbonate are said to be among the features of this property, reports stating that the mineral deposits have been found in some of the claims in massive bodies. The Helvetia starts with bright prospects of becoming a successful enterprise.

The officers of the Helvetia Copper Company are as follows:

WILLIAM A. PAINE, *President.*
FREDERIC STANWOOD, *Treasurer.*

Directors:

WILLIAM A. PAINE,	**J. H. RICE,**
FREDERICK A. GILBERT,	**JAMES R. COOPER,**
JAMES H. SEAGER,	**FRANK FELLOWS,**
S. L. SMITH,	**JAMES B. SEAGER.**

Production of Copper in Arizona.

The yearly production of copper in Arizona, as per Government returns, was as follows:

Year.	Pounds Fine.
1882	17,984,415
1883	23,874,963
1884	26,734,345
1885	22,706,366
1886	15,657,035
1887	17,720,462
1888	31,797,300
1889	31,586,185
1890	34,796,689
1891	39,873,279
1892	38,436,099
1893	43,902,824
1894	44,514,894
1895	47,953,553
1896	72,934,927
1897	81,530,735
1898	111,158,246

Phœnix Consolidated Copper Company.

The property of the Phœnix Consolidated Copper Company consists of 2,240 acres, situated in Keweenaw County, Mich., and embraces the old Phœnix, St. Clair and Garden City mines, and 185 acres on lake front in addition—the property has a mile and one quarter frontage on Lake Superior, immediately adjoining the port of Eagle River.

The corporation has been organized under the laws of the State of Michigan, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each. The subscription price was $8 per share, and the new company, after being successfully launched, starts out with promising prospects for its future success.

This property was opened up many years ago under a former management, and a good deal of copper was produced at a profit.

The Phœnix has very recently come across some very rich copper-bearing rock on its property, and with the intelligent development it will receive from the new management it will undoubtedly be able to put copper on the market under the best conditions possible.

There are several copper veins running through the property, besides four fissure veins known as the Phœnix, Robbins, Butler and Armstrong. The Minnesota and Cliff mines, the early dividend payers of Lake Superior, were operated successfully on fissure veins. The Calumet Conglomerate lode also runs through the property of the Phœnix Company.

Officers of the Phœnix Consolidated Mining Company are as follows:

J. R. STANTON, ***President.***
WM. C. STUART, ***Vice-President.***
J. WHEELER HARDLEY, ***Sec'y and Treas.***

Directors:

J. R. STANTON, WM. C. STUART,
J. WHEELER HARDLEY, J. OPPENHEIM,
FRANK McM. STANTON, of Michigan.

Office, 11-13 William Street, New York.

LAKE SUPERIOR COPPER PRODUCTION.

As per compilation of U. S. Geological Survey, the production of Lake Superior copper was as follows:

Year.	Pounds.
1887	76,028,697
1888	86,472,034
1889	88,175,675
1890	101,410,277
1891	114,222,709
1892	123,198,460
1893	112,605,078
1894	114,308,870
1895	129,330,749
1896	143,524,069
1897	145,282,059
1898	158,491,703

Winona Copper Company.

This is a promising new company organized November. 1898, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each. The Winona Company have a tract of some 1,400 acres of mineral land located in the great copper-producing district of Lake Superior, Mich. Some exploratory work was done on a portion of this property in 1865, when a fair showing of copper was made, but distance from railroad and expensive mining methods prevented successful operations.

After the company was organized development work began at No. 1 shaft and No. 2 shaft. The lode in both shafts was found to be well mineralized, and in No. 1 the vein was wider than the shaft at one time. The copper is stamp copper, with some masses here and there. These shafts are 19 x 7, and are expected to open up good copper ground as sinking continues.

Some time ago poor ground was encountered, but later reports are to the effect that the shaft in October last was again sinking where the amygdaloid was found rich in the bottom of the shaft. Crosscutting has exposed a strong lode south of No. 1 shaft, and the Winona will undoubtedly join the ranks of the regular Lake Superior producers in due course of time.

The shares of the company were listed on the Boston Stock Exchange December 22, 1898, at which date there was $309,735.81 cash in the treasury.

The officials of the Winona Copper Company are as follows:

JOHN STANTON, *President.*
JOSEPH E. GAY, *Vice-President.*
J. R. STANTON, *Treasurer.*
J. WHEELER HARDLEY, *Secretary.*

Directors:

JOHN STANTON,
JOSEPH E. GAY,
J. R. STANTON,
WILLIAM A. PAINE,
JAMES H. SEAGER.

Office, 11-13 William Street, New York.

Transfer Office, American Loan and Trust Company, Boston.

Place of Registration, Boston Safe Deposit and Trust Company, Boston.

Union Copper Land and Mining Company.

This company owns about 7,200 acres of land on the Mineral Range in Michigan, extending from Keweenaw to Ontonagon. These lands are very valuable. Although it has a mining charter, it is generally regarded as a land company; but it may at any time develop its own lands and make mines of them.

The company was reorganized in 1898 with a capital of 100,000 shares, 80,000 shares of which are issued. Par value, $25 per share.

Its officers are:

H. F. FAY, ***President.***
W. B. MOSMAN, ***Sec'y and Treas.***

Address, 60 State Street, Boston.

Directors:

H. F. FAY,
JOHN C. WATSON,
STEPHEN R. DOW,
W. B. MOSMAN,
WILLIAM R. COLBY,
R. R. GOODELL.

TREASURER'S REPORT.

UNION COPPER LAND AND MINING COMPANY.

To cash balance, June 1, 1898	$483.75
To receipts from old assessments	6,819.50
To receipts from sale of old delinquent stock	6,418.75
To sale of lands and treasury stock	180,000.00
To interest on deposits	884.22
	$194,606.22
By office rent and expenses at Michigan and Boston, including legal services and commission for sale of lands	$11,206.96
By incidental expenses	529.56
By taxes	1,700.38
By due individuals from auction sale of delinquent stock	1,926.01
By exploration work and machinery	4,850.00
By cash dividend	40,000.00
By balance, May 1, 1899	134,393.31
	$194,606.22

W. B. MOSMAN, *Treasurer.*

United States Copper Consumption.

Deducting the exports of copper from the production, as per official returns, the quantity left for domestic consumption during the years given below was as follows, in tons of 2,240 lbs. of fine copper, viz.:

	Year 1898. Tons.	Year 1897. Tons.	Year 1896. Tons.	Year 1895. Tons.
United States Production	234,272	216,106	203,894	171,197
United States Exports	145,115	129,210	125,605	64,722
Left for Domestic Consumption	89,157	86,896	78,289	106,475

	Year 1894. Tons.	Year 1893. Tons	Last Half of 1892. Tons.
United States Production	159,623	142,480	65,526
United States Exports	77,131	80,392	17,980
Left for Domestic Consumption	82,492	62,088	47,546

	First Ten Months 1899. Tons.
United States Production	215,201
United States Exports	93,453
Left for Domestic Consumption	121,748

Copper Production of the United States, by States.

Production of copper in the United States as per Government returns is as follows:

District.	1898. Pounds.	1897. Pounds.	1896. Pounds.
Lake Superior	158,491,703	145,282,059	143,524,069
Arizona	111,158,246	81,530,735	72,934,927
Montana	206,173,157	230,288,141	221,918,179
New Mexico	1,592,371	701,891	2,701,664
California	16,925,634	11,987,772	690,237
Utah	3,750,000	3,919,010	3,502,012
Colorado	16,274,561	11,873,033	6,022,176
Wyoming	233,044	....	....
Nevada	437,396	....	....
Idaho	1,266,920	183,277	....
South Dakota	1,261,393	2,440,338	....
Other States	5,395,226	4,472,017	4,704,993
Lead desilverizers, etc.	3,553,336	1,400,000	4,063,173
Total domestic	526,512,987	494,078,274	460,061,430
From imported pyrites, ores and regulus	*19,750,000	*12,000,000	*5,900,000
Total all sources	546,262,987	506,078,274	465,961,430

* Estimated.

Markeen Copper Company.

The Markeen Copper Company is a recently organized enterprise, with a capital of $1,000,000, divided into 100,000 shares of the par value of $10 each. It is said that the stock of the company has been largely taken by conservative people as an investment. The company's property is located in the Greenlee Gold Mountain Mining District, Graham County, Ariz.

The company has twenty odd mines, several of which are in various stages of development. The total acreage is about 370 acres. Of this 20 acres is contained in a mill site located on the San Francisco River, about three miles from the Millroad Station and the town of Clifton.

A report has been made on the property by D. J. Sayer, M. E., of Denver, Col., under date of April 12, 1899, from which the following extracts are taken:

"These veins occur in connection with porphyry dykes, which have filled up the great fissures in the Syenite, and are true fissure veins, having the Syenite as both of the true walls. The general strike of the veins is northeast and southwest, and the dip being almost vertical. They are great, strong veins, and can be readily traced on the surface for miles, where they crop out and show mineralization throughout their entire course.

"The Maine is a large vein, 20 feet wide or more at croppings, every fraction being highly impregnated with copper in the form of red oxide and carbonate. This is a very promising looking claim, with a strong vein and running parallel with the Great Western and Copper King groups, on which considerable development work has been done. These two groups show remarkably well for the amount of work done, and from surface indications the Maine looks even more promising, and I believe will make a big mine with development.

"We now come to the Mammoth and its extensions on the same vein, viz.: The Buster, Gray Eagle and Mountain Side. These claims are all on the Great Mammoth vein, containing in all 5,000 feet on this vein. The vein on which these claims are located is one of the strongest veins I have ever seen, and its bold outcrop makes it easily traceable for miles. Its width runs from 75 feet to 200 feet, and has a trend southwest to northeast, being 25 degrees north of east. This vein might properly be termed the Mother of the District, and shows evidence of much leaching at surface. From the fact of these veins all being in an acid rock they must all of necessity be more or less leached, and one has only to look at the croppings on the Mammoth, with its iron cappings of hydrated peroxide of iron, showing the soft and sponge-like character of its gossan. This is one great evidence of a great copper-bearing vein and depth, and the work already in hand goes to demonstrate this theory."

The other several claims are treated at more or less length in the report in an interesting manner. The expert named sampled the property quite thoroughly, and from some 26 samples copper was found in 25 of these samples, and silver in the majority of cases. Gold was also found. The expert arrives at an average for the high grade streak throughout the Cliff mine, as well as the value, as follows: Average width, 12 inches, and carrying 4.6 ounces silver, .03 ounce gold and 22 per cent. copper. Returns give an average of all the low grade ores taken from different points, the veins showing 2, 2½, 3, 4 and 6 feet in thickness—was 2.2 ounces silver, 5 per cent. copper, and in figuring all the low and high grade ore together, pro rata, the average was 3.4 ounces silver, .05 ounce gold and 8 per cent. copper.

The following report by Professor Leopold Balbach, the company's General Manager, under date of July 15, 1899, shows the extent of the development work upon several of the company's mines at that time, and the amount of ores then in sight and upon dumps:

"Maine Mine.—The shaft is 128 feet deep in low grade ore. The croppings of the veins show a width of from 15 to 25 feet. Crosscutting and drifting will be commenced at the depth of 150 feet, when no doubt large bodies of copper ore will be opened up.

"Mammoth Mine.—One shaft 25 feet deep in low grade ore. Main working shaft is down 93 feet in ore the bulk of which will assay from 3 to 5 per cent., with some streaks that will assay from 10 to 12 per cent. copper. This is a very large vein, the croppings varying from 50 to 200 feet wide, all heavily capped, which indicates large bodies of ore in depth.

"Spectator Iron.—The shaft on this has reached a depth of 60 feet. The vein is about 4 feet wide and carries some streaks of ore assaying well in copper and silver.

"Good Luck.—On this property a crosscut tunnel 325 feet long has been run, intersecting two small veins from 2 to 4 feet wide, averaging 3 per cent. copper: the tunnel will have to continue about 25 feet further to cut the main vein on the property. There is a shaft 65 feet deep on this vein, showing the vein to be from 2 to 6 feet wide. A streak of ore from 4 inches to over a foot wide continues all the way down, which averages 22 per cent. copper, 10 ounces silver and $2 gold per ton: the balance of the vein is concentrating ore averaging about 4 per cent. copper.

"Oregon has a tunnel run in on the vein 70 feet in length, with a crosscut at the face of 15 feet. All of this work is in ore carrying a percentage in copper, with some gold and silver values, one assay showing $80 gold and 5 ounces of silver per ton.

"Delaware.—The shaft on this property has reached a depth of 70 feet. The vein is 10 feet wide, and shows streaks of ore assaying well in copper and silver.

"Cliff Mine is opened by a crosscut tunnel, which intersects the vein 60 feet from its mouth and about 70 feet deep. From the intersection drifts have been run southwest 35 feet and northeast 180 feet. The vein in this drift averages 4 feet wide, carrying almost the entire length a streak of copper glance from 2 inches to 15 inches wide, averaging 23 per cent. copper, 5 ounces silver and $3 gold; the balance of the vein averages about 5 per cent. coppe

"In the southwest drift a winze has been sunk 40 feet deep, with a drift of 40 feet at the bottom. This shows the vein about the same as in the drift.

"In the northeast drift is a winze 95 feet deep, with drifts at the bottom each way 50 feet long. The vein in the bottom of the winze and in the drifts has widened to between 7 and 8 feet. The entire width averages 8 per cent. copper, 3 ounces silver and $1.50 gold per ton.

"A crosscut tunnel has been commenced which will intersect the vein about 50 feet below the bottom of the 95-foot winze, and about 210 feet from the surface. This tunnel will be 300 feet long, and is now in 45 feet.

"The amount of ore in sight in this mine is conservatively estimated at 10,000 tons, which will average 8 per cent. copper, 3 ounces silver and $2 gold per ton.

"On the dumps are 150 tons of ore averaging 8.75 per cent. copper, 2 ounces silver and $1.50 gold per ton.

"The waste dump contains 2,000 tons averaging 3.2 per cent. copper. In all 12,150 tons, having a gross value of $330,000."

Officers of the Markeen Copper Company are as follows:

THOMAS A. LEE, *Pres. and Treas.*

M. FRASER BOLEN, *Vice-Pres.*

R. HORTON BATCHELOR, *Sec'y.*

LEOPOLD BALBACH, M. E., *Gen'l Manager at the Mines and Works.*

Office, 66 Broadway, New York.

Mines and Works, Clifton, Arizona.

United States Copper Mines.

NON-DIVIDEND PAYING MINES.

Name of Company.	Location.	Number of Shares.	Par Value.	Issued Capital.	Paid in up to Oct. 1, 1900. Per Share.
Adventure............	Michigan...	100,000	$25.00	$2.500.000	$ 5.00
*Allouez	Michigan...	100,000	25.00	2.500.000	19.95
Arcadian............	Michigan...	100,000	25.00	2.500,000	20.00
Arnold	Michigan ...	100.000	25.00	2.500.000	
Baltic	Michigan...	100.000	25.00	2.500.000	15.00
Bingham Cop. & Gold	Utah.......	200.000	10.00	2.000.000	
British Columbia	B. Columbia	200.000	5.00	1,000.000	5.00
Boston & B. Columbia	B. Columbia	300.000	10.00	3.000.000	
Boston & Carolina....	N. Carolina.	100,000	25.00	2,500.000	
Butte & Boston.......	Montana ...	200.000	10.00	2,000.000	10.00
†Centennial............	Michigan.	100.000	25.00	2.500.000	
Colonial............	Canada	5.000 000	1.00	5.000 000	
Copper King	Arizona ...	5.000.000	1.00	5.000.000	
Copper Range........	Michigan...	100.000	25 00	2.500.000	10.00
Elm River............	Michigan..	100 000	12.00	1.200 000	
Great Lakes	Canada ...	600,000	5.00	3.000.000	
Helvetia	Arizona	200.000	25.00	5.000.000	
Humboldt	Michigan...	40.000	25.00	1.000.000	3.00
Isle Royale Con.......	Michigan...	150.000	25.00	3.750.000	
Markeen	Arizona	100.000	10.00	1.000 000	
Mayflower	Michigan...	100.000	25 00	2 500.000	8.00
Mass Con.....	Michigan...	100,000	25 00	2,500.000	8 00
Meadow.......... ..	Michigan...	60.000	25.00	1.500.000	1.25
Michigan.............	Michigan...	100,000	25.00	2.500.000	10 00

* 20,000 shares in Treasury. † 10.000 shares in Treasury.

United States Copper Mines.

NON-DIVIDEND PAYING MINES.

Name of Company.	Location.	Number of Shares.	Par Value.	Issued Capital.	Paid in up to Oct. 1, 1899 Per Share.
Mohawk	Michigan	100,000	$25.00	$2,500,000	$ 7 50
Old Colony	Michigan	100,000	25.00	2,500,000	10.00
Old Dominion	Arizona	200,000	25.00	5,000,000	
Phœnix	Michigan	100,000	25.00	2,500,000	8.00
Rhode Island	Michigan	100,000	25.00	2,500,000	5.00
Santa Fe	New Mexico	250,000	10.00	2,500,000	
Tecumseh	Michigan	100,000	25.00	2,500,000	
†Tennessee	Tennessee	200,000	25.00	†5,000,000	
Tri-Mountain	Michigan	100,000	25.00	2,500,000	4.00
*United States	Utah	400,000	25.00	*10,000,000	
Union Copper Co	N. Carolina.	300,000	10.00	3,000,000	
‡Union Copper L. & M.	Michigan	100,000	25 00	‡2,500,000	
United Verde Extens'n	Arizona	350,000	10 00	3,500,000	
United Verde Junior	Arizona	200,000	10.00	2,000,000	
Utah Con	Utah	300,000	£1	£300,000	
Victoria	Michigan	100,000	$25.00	$2,500,000	7.00
Wahnita	Michigan	100,000	25.00	2,500,000	5.00
Washington	Michigan	40,000	25.00	1,000,000	
Winona	Michigan	100,000	25.00	2,500,000	8.00
Wyandotte	Michigan	100,000	25.00	2,500,000	8.00
Wyoming	Wyoming	40,000	25.00	1,000,000	

† 25,000 shares in Treasury. * 150,000 shares in Treasury. ‡ 20,000 shares in Treasury.

Rhode Island Copper Company.

The Rhode Island Copper Company was incorporated under the laws of the State of Michigan December 9, 1898, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each. The shares of the company were listed on the Boston Stock Exchange February 2, 1899, at which date there was the sum of $200,000 cash in the treasury.

The property comprises 800 acres of mining land, and is located north of the Franklin Junior and south of the Tecumseh. The enterprise was put on the market at the subscription price of $5 per share, and in a short time the total issue was taken.

Development work was begun on the Rhode Island toward the end of 1898, and the sinking of No. 1 shaft has reached a depth of about 130 feet. Thus far the lode is reported of average width, yielding a very profitable stamp rock. Copper has been also found in large and small masses, and although the vein rock has not been found uniformly rich it is said to be of excellent character.

When greater depth is attained at No. 1 and No. 2 shafts, which have been planned for opening up the mine, favorable results are expected.

The officials of the Rhode Island Copper Company are as follows:

*THOS. F. MASON, *President.*
T. HENRY MASON, *Vice-President.*
WM. R. TODD, *Treasurer.*
W. A. O. PAUL, *Assistant Treasurer.*

Directors:

*THOS. F. MASON,
ISAAC H. MESSERVE,
T. HENRY MASON,
WM. R. TODD,
JOHN W. WEEKS,
CHAS. J. DEVEREAUX,
SAML. B. HARRIS.

Principal Office, 45 Broadway, New York.

Transfer Office, American Loan and Trust Company, Boston, Mass.

Place of Registration, Massachusetts National Bank, Boston, Mass.

* Deceased.

Exports of Copper.

The following table shows the exports of copper in ingots, bars, plates, etc. (matte not included) by ports shipping copper:

U. S. Export Port.	1898. Pounds Fine.	1897. Pounds Fine.
New York	178,400,314	167,344,812
Baltimore	87,027,133	88,389,939
New Orleans	15,508,831	13,882,408
Newport News	2,638,868	5,899,609
Norfolk	5,249,820	....
Boston and Charlestown	439,368	928,584
Philadelphia	68,624	227,023
Newark	673,180	....
Huron, Mich.	118,827	229,226
Detroit, Mich.	728,689	164,317
Galveston	444,920	....
Burlington	410,410	102,718
All others	246,921	87,106
Total ingots, bars, plates, etc.	291,955,905	277,255,742

The exports of matte in addition to the above for 1898 were 9,343 tons, and amounted in 1897 to 9,064 tons.

Lake Superior Copper Shareholders.

Copper mining companies of Michigan file annual returns with the State authorities, giving list of names of shareholders. From the official records in the year 1899 the following table is prepared:

Company.	Year 1899.	Year 1898.	Year 1897.	Year 1896.	Year 1895.
Calumet & Hecla	2,859	2,716	2,590	2,464	2,458
Osceola	1,522	1,477	900	823	1,023
Quincy	1,449	1,445	1,041	978	907
Tamarack	1,157	1,353	1,371	1,178	1,140
Wolverine	688	625	445	333	218
Franklin	550	442	461	458	473
Centennial	337	438	....	....	....
Atlantic	300	401	400	364	385
Total	8,862	8,897	8,120	7,474	7,652

The number of shareholders of other Lake Superior copper mining properties are as follows in 1899, as per official lists:

Company.	Year 1899.
Baltic	486
Winona	468
Adventure	431
Arnold	403
Arcadian	301
Allouez	449
Central	196
Rhode Island	97
Meadow	96
Mohawk	61
Michigan	22
Total	3,010

RARITAN COPPER WORKS, PERTH AMBOY, N. J.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

Raritan Copper Works.

The new copper refinery erected by Lewisohn Brothers at Perth Amboy, N. J., is one of the finest plants in the world, admirably adapted to the purposes for which it was built, and equipped with the most modern improvements for the treatment of copper.

The buildings, appurtenances, machinery, etc., are all entirely new and thoroughly adapted for the handling of large quantities of copper. The new plant was completed and put in operation during the Summer of 1899, and is now regularly engaged in the production of electrolytic copper, including the separation of the precious metals from the base.

Located on the Raritan River, the double advantage of rail and water transportation facilities is available, and the new works are now receiving the product of both Western mines and foreign producers for the purpose of undergoing final treatment. The question of cost, together with the very best results attainable in other respects, has been successfully solved, so that the highest grade of metal under the most economical conditions are features of this extensive and finely equipped plant.

Copper King of Arizona.

The following information has been furnished to us by the company:

Copper King of Arizona was organized March 16, 1896, under the laws of West Virginia, with an authorized capital of 5,000,000 shares of $1 each, par value, the incorporators being Jere R. Fleet, W. H. Mack, T. F. Gaynor and Charles R. Lee, all of Brooklyn, and Charles H De Voll, of New York.

All of its share capitalization, except the shares subscribed by the incorporators, was issued to B. C. Davis, a corporation lawyer of Brooklyn, N. Y., in consideration of certain rights acquired by him from Charles W. Blackburn and Charles S. Mansur, of Cochise County, Ariz., to twenty-three mining claims located by these gentlemen in Bisbee and at Solomon Springs, eight miles east of Bisbee, in the county of Cochise, Ariz. Thereupon Mr. Davis was elected a director and president and manager of the company.

Mr. Davis's plan was to put the company on a dividend-paying basis with the proceeds derived from the sale of a portion of the stock and then divide the stock remaining unsold with Messrs. Mansur & Blackburn for their properties.

In 1897 development was begun on the Bisbee properties. A vertical double compartment shaft has been sunk to a depth of 600 feet, and being as deep as any mine in the vicinity, and having first class buildings and hoisting machinery, to make it operative and complete.

In May, 1898, the company had over $30,000 in its treasury and no debts. Two of its directors (Messrs. Fleet and Lee) resigned at that time, and their places were filled by the election of N. McConaughy, of New York, and H. A. Stearns, ex-Lieutenant Governor of Rhode Island, as directors.

In the Summer of 1898 the company acquired a new group of valuable copper properties near the South Pass in the Dragoon Mountains, Cochise County, Ariz., at a place known as Barrett, which derives its name from the original locator of the mines, Mr. James Barrett.

In the early part of the year 1899, Mr. Davis' health was so precarious that he took a six weeks' trip through the West, with the hope of regaining his physical strength; but he returned home on April 10 completely broken down, and after an illness of two weeks he died on April 23, 1899.

William A. Washburne, of New York, was elected to fill the vacancies on the Board of Directors and as President occasioned by the death of Mr. Davis.

In the meantime the company's interests have been advanced, and the results attained have been that the company has now (Nov. 30, 1899) the distinction of having over 3,500 stockholders, located in all parts of the world, and, so far as is known, in point of number of shareholders it is the largest mining company in America.

It has now three groups of properties in Arizona, aggregating a square mile in territory in advanced stages of development. The company's policy has always been and is to pay its way as it goes, to contract no debts, to have no properties under bond or lease and issue no preferred stocks or bonds, or other evidence of debt that will be ahead of the stock of the company in any way.

The financial plan upon which the company has been developed placed nearly all of the share capitalization available for treasury and development purposes until dividends are paid. To this plan is due the large number of stockholders which the company has, the extent and value of its properties and leaves a large amount of share capitalization yet available for treasury purposes, to bring the company to a dividend paying basis.

A description of the company's properties is as follows:

The Bisbee properties consist of sixteen full claims, 1,500 feet in length by 600 feet in width, or about 20 acres in area each, all adjoining each other and contiguous to the Copper Queen Mine, one of the greatest copper mining enterprises of the world.

The geological formation at Bisbee consists of a wide cañon running east and west, upon one side of which is a range of high limestone mountains, while on the opposite side is a range of porphyry mountains, the contact, or line of junction, between the two formations being along the line of the cañon.

The copper deposits are found in the cañon and extend into the mountains alongside.

The shafts and works of the Copper Queen mines, as well as the shaft of the Copper King, are as near as possible to the cañon without being directly in it.

The general trend of the ore deposits, as shown by the operations of the Copper Queen Company, is from west to the eastward or along the cañon or near it in a southeasterly direction, and toward the shaft of the Copper King, which is less than half a mile from one of the shafts of the Copper Queen Mine.

The Copper King No. 1 shaft at Bisbee, at its 600-foot level, has three drifts, each of about 100 feet in length. They run in a westerly, easterly and northerly direction respectively.

The shaft is now in a sulphide formation, carrying not only copper, but also gold and silver in low percentages.

At Solomon Springs the company owns eight full claims in which ore of a high grade, averaging 25 per cent. in copper and several hundred ounces of silver to the ton, exists. On account of the distance from the Bisbee, the company has not pushed development on its Solomon Springs properties, beyond establishing the existence and location of the ore bodies, although some shipments of ore have been made, from which high values were assayed.

At Barrett the company has continued operations since the purchase of this property was made, in 1898, mainly with a view of locating the ore bodies for future extraction, and at most desirable points in the contact which exists there.

The geological formation at Barrett is the same as at Bisbee, except that the contact crosses the cañon at Barrett at right angles instead of being coincident with it, as at Bisbee. The result of this condition at Barrett is that the contact, or line of ore bodies, can be clearly seen in either direction, viewed from the cañon, and the limestone and porphyry formations are closer together than at Bisbee, being in fact together in the mountains.

The ores are exposed at the surface and are followed into the mountains by tunnels and shafts, and mining is done there with great economy. The ores are of a rich oxide or carbonate formation, of free smelting character, and are identical in appearance with those of the Copper Queen ores at Bisbee.

When the Barrett properties were acquired the water supply was insufficient, which delayed the operations of the smelter which the company has upon the ground; but in following the ore down about 100 feet or so living streams of water were encountered and very high-grade carbonate ores, with considerable pure native copper associated therein, were found, all of which indicates the existence of large bodies of high-grade smelting ore.

The operations which have been conducted at Barrett have resulted in the extraction of an amount of ore roughly estimated at 1,000 tons up to date, and of a quality that will average 10 per cent. copper.

The contact or mineral deposits in which the ores are found, along which the company's claims are located at Barrett, come to the surface of the ground and can be clearly traced for over a mile in length and average 50 feet in width. Judging from the clear definition and boldness of the outcrop, the indications are that the deposits are of a true fissure character, and extend downward to unknown depths, and that when opened up very large bodies of ore will be uncovered.

As with all the other great Arizona copper mines, the ore that is found exposed is of an oxide or "free smelting" formation, but it is very likely that when sufficient depth is attained they will change to the sulphide formation characteristic of all the copper mines of Arizona and elsewhere throughout the world. The contact, which is another name for a very wide and extensive fissure vein, is of such dimensions that it will in all probability develop into a great mine and equal any of those in successful operation now in Arizona, when the properties are fully developed.

The improvements at Barrett consist of a double compartment inclined shaft, which is now down about 160 feet in high-grade carbonate ores and native copper, with all the indications that the main ore body is tapped at that locality.

A tramway 500 feet in length connects the smelter with the shaft, and at which is a steam hoist for bringing the ore to the surface, and by means of which it may be dumped in tram cars and delivered at the smelter with a single handling operation.

The smelter is a water-jacketed pattern, and of 30-ton daily capacity, and is provided with a steam boiler, steam engine and blower equipment large enough to run a smelter plant of a larger capacity.

There are also at Barrett other steam pumps and boilers to run same to furnish power to pump the water out of the mines.

The water for the smelters is obtained out of a well in the cañon and out of the mines, and stored in two large tanks of 15,000 gallons capacity each, and five cooling tanks, each

12 feet in diameter, are employed to use the water over again indefinitely, as is done elsewhere in connection with smelters.

There are the requisite buildings for dining and lodging purposes for the hands, so the latter can live at the mines as in any other mining camp.

The Barrett properties are about nine miles from the famous Commonwealth Gold Mine at Pearce, and are about 25 miles from Cochise, a station on the Southern Pacific Railroad.

Cochise is reached by a good level roadway in the Sulphur Spring Valley, at the edge of which the Barrett properties are situated.

The company has already smelted some of its ores, and they run over 9½ per cent. in black copper. The company intends to resume smelting operations at once, and to increase its present smelting capacity to at least 100 tons per day at Barrett, with corresponding development work there, and has already ordered another 30-ton smelter, which will be ready for use before the end of the present year, and when all these conditions are attained it expects to be on a dividend paying basis.

The directors and officers of the Copper King of Arizona are:

Directors:

T. F. GAYNOR,	N. McCONAUGHY,
WM. H. MACK,	H. A. STEARNS,

WILLIAM A. WASHBURNE.

President:

WILLIAM A. WASHBURNE.

Vice-President:

N. McCONAUGHY.

Secretary and Treasurer:

T. F. GAYNOR.

Offices of the company: 33 Wall Street, New York City.

Ames Building, corner of Court and Washington Streets, Boston, Mass.

St. Mary's Canal Mineral Land Company.

The real property of this company, December 31, 1898, consisted of 109,312.42 acres, besides mineral rights in 6,701.69 acres additional.

The company has a capital of $1,000,000, divided into 20,000 shares, of the par value of $50 each.

During the year 1898 the sales were as follows:

2,040 acres of land, in fee simple, for	$442,100
40 acres of land, the mineral rights to which were reserved	1,000
Pine timber	90,000
Total sales	$533,580

The average price received for mineral land sold was $220.75 per acre, and for other land $20 per acre. The pine sold brought an average price of $4.50 per 1,000 feet.

Payments on account of the above sales were made part in cash and part in notes of the Tamarack Mining Company, and in stock of the Old Colony Copper Company, and of the Winona Copper Company.

During the year 1898 the company paid two dividends in cash and two stock dividends, as follows:

January 25, 1898, one and one-quarter shares Baltic Mining Company stock per share of St. Mary's.

October 25, 1898, $5 per share in cash.

November 18, 1898, $3.50 per share in cash.

December 23, 1898, one-half share Winona Copper Company stock per share of St. Mary's.

The above distributions last year were therefore 25,000 shares of Baltic Mining Company's stock, 10,000 shares of Winona Copper Company's stock, and $170,000 in cash.

The property of the St. Mary's Canal Mineral Land Company is so scattered along the mineral range that it receives benefit whenever a new mine is opened at any point on the range. The company's land lies between two points 90 miles apart, and three-fourths of it is on the mineral range.

ASSETS AND LIABILITIES, DECEMBER 31, 1898.

Assets:

Land unsold, 109,312 42-100 acres, assessed at.....	$395,700.00
Mineral rights to 6,701 69-100 acres............	1.00
Stock in St. Mary's Canal Mineral Land Co., 80 shares at par	4,000.00
Stock in Pacific Copper Co., 20,000 shares........	200,000.00
Stock in Baltic Mining Co., 86 shares.............	1,032.00
Stock in Winona Copper Co., 842 shares..........	5,575.00
Stock in Old Colony Copper Co., 20,000 shares....	100,000.00
Notes of the Tamarack Mining Co................	70,000.00
Cash	218,655.59
Profit and loss	5,036.41
	$1,000,000.00

Liabilities:

Capital stock, 20,000 shares at par................	$1,000,000.00

Officers of the St. Mary's Canal Mineral Land Company are the following:

NATHANIEL THAYER, *President.*
CHARLES J. PAINE, *Vice-President.*
ARTHUR G. STANWOOD, *Secretary and Treasurer.*

Directors:

H. HOLLIS HUNNEWELL,
J. HENRY BROOKS,
NATHANIEL THAYER,
CHARLES J. PAINE,
SAMUEL N. BROWN,
CHARLES E. PERKINS,
ALBERT S. BIGELOW,
W. CAMERON FORBES.
GEORGE P. GARDNER.

Office, Boston, Mass.

Production of Gold, Silver and Copper in Montana.

The following tables give the production of gold, silver and copper in the State of Montana during the past five calendar years:

	Year 1894.	Value.
Gold	187,135.253 fine ozs.	$3,868,438.87
Silver..........	13,638,967.20 "	17,634,219.78 (coining value)
Copper..........	186,310,472 pounds.	17,233,718.06

	Year 1895.	Value.
Gold...........	198,405 fine ozs.	$4,101,400.00
Silver..........	17,569,100 "	22,715,600.00 (coining value)
Copper..........	201,082,992 pounds.	21,114,800.00

	Year 1896.	Value.
Gold...........	209,207 fine ozs.	$4,324,700.00
Silver..........	16,737,500 "	21,640,404.00 (coining value)
Copper..........	232,096,483 pounds.	25,356,541.00

	Year 1897.	Value.
Gold	217,514.346 fine ozs.	$4,496,430.92
Silver..........	16,807,346.06 "	21,730,710.03 (coining value)
Copper..........	237,158,540 pounds.	26,798,918.02

	Year 1898.	Value.
Gold...........	254,867.787 fine ozs.	$5,247,913.00
Silver..........	14,818,661.98 "	19,159,493.17 (coining value)
Copper..........	216,979,334 pounds.	26,102,616.29

Market Values of Copper Mining Shares.

The wonderful increase in the market value of the leading copper mining shares during the past six years is shown in the following table:

Mine.	Lowest, 1893.		September 20, 1897.		September 5, 1899.	
	Price of Shares.	Market Value.	Price of Shares.	Market Value.	Price of Shares.	Market Value.
Calumet & Hecla..	$247	$24,700,000	$495	$49,500,000	$840	$84,000,000
Boston & Montana	15	2,250,000	152	22,800,000	350	52,500,000
Tamarack........	112	5,600,000	143	8,580,000	228	13,680,000
Quincy...........	80	4,000,000	121	12,100,000	160	16,000,000
Butte & Boston ..	5	1,000,000	31	6,200,000	74	14,800,000
Osceola...........	20	1,000,000	41	2,050,000	88	8 800,000
Atlantic..........	7	280,000	27¾	1,110,000	30½	1,220,000
Franklin..........	8½	340,000	25½	1,020,000	20½	820,000
Wolverine........	¾	45,000	18¾	1,125,000	46½	2,790,000
Centennial........	1¾	140,000	24	1,920,000	35	2,800,000
Total 10 Mines..		$39,355,000		$106,405,000		$197,410,000

Lowest and highest prices of Lake Copper during the year 1893 were 9⅜ and 12½ respectively. Price of Lake Copper on September 20, 1897, was 11⅜, and on September 5, 1899, it was 18½.

Sales were made of the following stocks at prices named on dates named below:

Mining Stock.	Date.	Sold at.	Market Value of Mine.	Price Lake Copper same date.
Calumet & Hecla...	February 21, 1899....	$895	$89,500,000	18 cts.
Tamarack..........	February 23, 1899....	265	15,900,000	18 "
Boston & Montana..	April 24, 1899.......	400	60,000,000	19 "
Butte & Boston.....	April 28, 1899.......	108	21,600,000	19½ "
Quincy............	January 26, 1899.....	190	19,000,000	16½ "
Osceola............	February 18, 1899....	105	10,500,000	18 "
Atlantic............	January 30, 1899....	45	1,800,000	16½ "
Franklin...	February 2, 1899....	30	1,200,000	18 "
Wolverine..........	February 20, 1899...	50	3,000,000	18 "
Centennial.........	February 23, 1899...	53½	4,280,000	18 '
			$226,780,000	

United States Mining Company.

This new company has obtained control of a large area of mining property in Utah, where several groups of mines have been consolidated under the above management. The Old Jordan Mine, where operations date back to 1863, is a part of the company's holdings, and in itself has a length of over a mile, from which a large production has been obtained during the past years. The property has many miles of tunnels, drifts, shafts and raises, much ore and great possibilities as new development work progresses.

Besides the Jordan-Galena group, the company owns the Telegraph group, Niagara group and other extensive territory, upon which are found the Henrietta vein, the Highland vein, the Commercial vein, and several other veins. Copper-iron sulphide ore carrying gold and silver predominates, and the amount of ore reserves in sight are reported to be enormous. In some of the workings on the property the ore bodies are said to run from 3 per cent. to 25 per cent. copper, 18 per cent. to 35 per cent. iron, and carry 5 to 15 ounces of silver, and from $2 to $20 in gold. Mining operations for silver and lead have been carried on at these workings for many years on a large and profitable scale, but the uncovering of gold and copper deposits has brought the Utah district into prominence as a prospective producer of importance.

At the Highland Boy vein there are said to be vast reserves of concentrating ore, and that an essentially copper-bearing property is expected to be developed at this point. The total extent of veins found on the company's territory is said to be over 35,000 linear feet, and the problem of systematically developing such a vast enterprise will require years of active operations.

The company was organized under the laws of the State of Maine, with an authorized capital of $10,000,000, divided into 400,000 shares of a par value of $25 each. The amount of stock issued is $6,250,000, and is non-assessable. The United States Mining Company shares were listed on the Boston Stock Exchange May 4, 1899. During the Spring of 1899 the company was said to have $1,000,000 in the treasury.

Officers of the United States Mining Company are as follows:

EDWARD A. CLARK, *President.*
CHARLES H. COLE, JR., *Treasurer.*
F. W. BATCHELDER, *Secretary.*

Directors:

EDWARD A. CLARK,
WILLIAM H. COOLIDGE,
W. S. McCORMICK,
CHARLES H. COLE,
ALBERT F. HOLDEN,
JOSEPH S. RICKER.

Office, 8 Congress Street, Boston.
Place of Registration, Globe National Bank, Boston.

English Copper Consumption.

The following returns show the movement of copper in England, during the periods named, in tons of 2,240 pounds fine:

	1899. First Ten Months. Tons.	1898. Twelve Months. Tons.	1897. Twelve Months. Tons.	1896. Twelve Months. Tons.
Imports into England...	117,971	139,704	136,555	135,856
Exports from England..	63,532	76,448	71,386	72,489
Difference..............	54,439	63,256	65,169	63,367
Difference in Stocks,	Dec., 677	Dec., 5,624	Dec., 4,201	Dec., 12,229
Apparent Consumption of Foreign Copper in England, including Sulphate of Copper Exported...............	55,116	68,880	69,370	75,596

	1895. Twelve Months. Tons.	1894. Twelve Months. Tons.	1893. Twelve Months. Tons.
Imports into England..............	119,941	125,009	129,832
Exports from England..............	77,990	65,689	80,986
Difference..........................	41,951	59,320	48,846
Difference in Stocks	Dec., 7,950	Inc., 9,478	Dec., 7,663
Apparent Consumption of Foreign Copper in England, including Sulphate of Copper Exported........	49,901	49,842	56,509

United Verde Extension Gold, Silver and Copper Mining Company.

This is a recently organized company, with a capital of 350,000 shares of the par value of $10 each, 50,000 shares to be retained in the treasury. Of the remaining 300,000 shares 125,000 are accepted by the owners in part payment for the property, leaving 175,000 shares for public subscription. The 175,000 shares were offered to the public in March, 1899, at $6 per share.

The mines of this company are located in Arizona, and the property was put on the market by Schofield, Whicher & Co., of Boston.

The former President of the Parrot Silver and Copper Company stated in March last that he had practical mining on the property for upwards of five months, and that he was fully satisfied of its great value. The company is said to be making satisfactory progress in its development work, and that it is now evident that in some of the openings they are only a short distance from the ore bodies.

President, **GEORGE W. HULL, Jerome, Ariz.**
Vice-President, **C. H. HUTCHINS, Worcester, Mass.**
Treasurer, **L. E. WHICHER, Boston, Mass.**

The above, with R. T. McCabe, New York, and George D. Moulton, Boston, are the Directors.

Production of Copper, Including Precious Metals for the Whole United States.

Year 1893.		Value.
Gold	1,739,323 fine ozs.	$35,955,000
Silver	60,000,000 "	75,575,757 (coining value.
Copper	339,785,972 pounds.	

Year 1894.		Value.
Gold	1,910,813 fine ozs.	$39,500,000
Silver.............	49,500,000 "	64,000,000 (coining value.)
Copper	364,866,808 pounds.	

Year 1895.		Value.
Gold	2,254,760 fine ozs.	$46,610,000
Silver	55,727,000 "	72,051,000 (coining value.)
Copper	385,918,404 pounds.	

Year 1896.		Value.
Gold	2,568,132 fine ozs.	$53,088,300
Silver	58,834,800 "	76,069,236 (coining value.)
Copper	465,961,430 pounds.	

Year 1897.		Value.
Gold	2,774,936 fine ozs.	$57,363,000
Silver.............	53,363,000 "	69,637,172 (coining value.)
Copper	506,078,274 pounds.	54,989,927 (est.)

Year 1898.		Value.
Gold	3,118,398 fine ozs.	$64,463,000
Silver	54,438,000 "	70,384,485 (coining value.)
Copper	546,262,987 pounds.	61,660,248 (est.)

Copper Supplies of the World.

IN TONS OF 2,240 POUNDS FINE.

PRODUCTION OF COPPER FOR THE PAST FOUR YEARS, AS FOLLOWS:

		1898		1897		1896		1895	
Algeria		50		......		......		85	
Argentina		125		200		100		150	
Australasia		18,000		17,000		11,000		10,000	
Austria		1,110		1,210		1,075		1,110	
Bolivia—Coro/coro		2,050		2,200		2,000		2,250	
Canada		8,040		5,905		4,000		*4,000	
Chili		24,850		21,900		23,500		22.075	
Cape of Good Hope,									
Cape Co.		4,660		5,290		5,470		5,350	
Namaqua		2,400		2,150		1,980		1,730	
England		*550		555		555		580	
Germany—Mansfeld		18,045		17,960		18,265		14,860	
Other German		2,040		2,185		1,800		1,695	
Hungary (including Bosnia and Servia)		430		445		210		200	
Italy		3,435		3,480		3,400		*2,500	
Japan		25,175		23,000		21,000		18,430	
Mexico—Boleo		9,435		10,170		9,940		10,450	
Other Mexican		*1,000		*1,200		1,210		1,170	
Newfoundland—									
Betts Cove		300		......		......		......	
Tilt Cove		1,800		1,800		1,800		1,800	
Norway—Vigsnaes		......		......		......		960	
Other Norwegian		3,615		3,450		2,500		1,725	
Peru		3,040		1,000		740		450	
Russia		*6,000		6,025		5,100		5,280	
Sweden		480		545		500		515	
Spain and Portugal.	Rio Tinto	33,882	53,402	33,924	54,084	33,000	53,325	33,500	54,950
	Tharsis	*12,000		*12,000		12,000		12,000	
	Mason & Barry	3,600		*4,300		*3,900		*4,100	
	Sevilla	800		810		1,025		1,050	
	Other Mines	3,120		3,050		3,400		4.300	
United States of America.	Calumet & H.	*40,400	234,271	40,352	216,060	40,383	203,893	34,454	172,300
	Other Lake	30,062		24,301		24,286		23,582	
	Anaconda	47,863		58,697		55,603		41,988	
	Other Mont.	49,537		44,831		37,673		40,606	
	Arizona	48,359		35,979		31,548		21,429	
	Other States	18,050		11,900		14,400		10,246	
Venezuela—Aroa		......		......		......		......	
Total		424,303		397,814		373.363		334,565	

*Estimated.

The British Columbia Copper Company, Limited.

The mines of this company are located near Greenwood, British Columbia, about 12 miles over the boundary line.

The company was organized under the corporation law of the State of West Virginia, and registered under Companies Act, 1897, in British Columbia. It has a capital stock of 200,000 shares, par value of $5 each, which has all been paid in. During the latter part of September, 1899, the mine was in shape to ship ore immediately upon completion of the railroad to the ore dump, which was expected early in October. The company is erecting its own smelter, and is said to have a good body of ore, which can be concentrated to a considerable degree before being subjected to smelter treatment.

The stock was placed on the list on the Boston Stock Exchange April 13, 1899.

The officers of the company are as follows:

J. F. TICHENOR, *President.*
W. L. GAREY, *Treasurer.*

Directors:

PAUL BABCOCK,
C. E. LAIDLAW,
H. L. HORTON,
J. F. TICHENOR,
F. L. UNDERWOOD.

Office, 31 Nassau Street, New York.
Transfer Office, Old Colony Trust Company, Boston.
Place of Registration, New England Trust Company, Boston.

Utah Consolidated Gold Mines Company, Limited.

This company has a capital of £300,000, divided into 300,000 shares of the par value of £1 each. It has been incorporated under the English Companies' Acts, 1862-1890. The receipts of the International Trust Company, of Boston, for this company were placed on the list of the Boston Stock Exchange January 5, 1899, when there was $191,556 cash on deposit with Lewisohn Brothers, New York, and £16,000 in London to the credit of the company.

The property is located in Utah, and is reported to be a mine possessing great mineral wealth. Production has already begun, and the company was said to be turning out 500 tons of copper per month. The ore carries gold and silver as well as copper, and advices are to the effect that there are great quantities of ore in sight upon which a large profit is calculated.

The Directors of the Utah Consolidated Gold Mines Company, Ltd., are as follows:

JOHN E. DUDLEY RIDER,
SAM NEWHOUSE,
H. H. CAMPBELL,
FRANK L. GARDNER,
J. F. A. CLARK,
AUGUSTUS P. B. LOFTUS,
T. B. CASEY.

RICHARD E. STONE, *Secretary*.

Principal Office, 11 Copshall Court, London, England.

Transfer Office, International Trust Company, Boston, Mass.

Place of Registration, Massachusetts Loan and Trust Company, Boston, Mass.

The Colorado Mining and Smelting Company.

The mines of this company are located in the Butte district, Montana, and are several in number. Those operated last year, however, were the Gaguon and Otisco. The Gaguon Mine has been operated for more than 20 years, and the shaft is down 1,625 feet, 100 feet of which was sunk in 1898. The shaft has three compartments and follows an incline of 74 degrees.

The company began a new shaft at Otisco Mine which has reached a depth of 200 feet, all of which was sunk in 1898.

The Colorado Mining & Smelting Company is capitalized at $1,000,000 divided into 100,000 shares of the par value of $10 each. It is one of the so-called Standard Oil properties, and had paid $350,000 in dividends from January 1, 1899, to June 1, 1899.

The Washoe Copper Company.

This property is located in Butte, Mont. Extensive underground development work has been carried on at the mines, with the object of preparing for a regular output. The company owns several claims in the Butte district, and reports favor the impression that valuable ore bodies exist on the Washoe territory. This is one of the properties the new Amalgamated Copper Company has obtained control of.

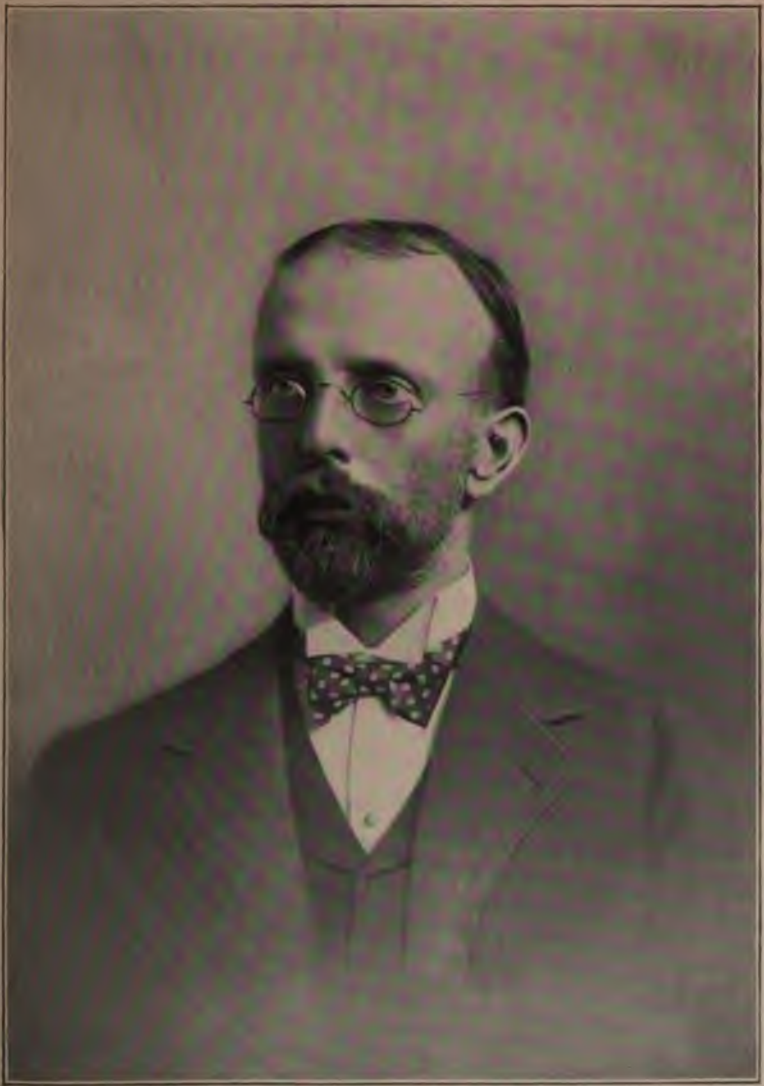
The only mine operated by the company during the year 1898 was the Moonlight. The main shaft at this property is down 1,300 feet, of which 400 feet were sunk in 1898. This shaft is three-compartment, and timbered with 10 x 10 shaft timbers. The Poulin Mine also belongs to the Washoe Company, where a three-compartment shaft has been sunk 1,200 feet. The character of the ore at these properties is copper-silver, and the policy of the Washoe management has been to prosecute development on a large scale before beginning to send ore to smelter.

United States Copper Mines. Production.

POUNDS FINE.

	Year 1896.	Year 1897.	Year 1898.
Anaconda	125,350,693	131,471,127	107,214,059
Calumet & Hecla	90,356,733	88,378,986	94,103,000
Boston & Montana	60,250,000	60,000,000	62,000,000
Tamarack	16,495,000	20,000,000	22,500,000
Parrot	8,045,648	14,824,487	12,444,828
United Verde	22,327,950	31,355,025	42,328,926
Copper Queen	23,298,150	23,999,873	33,749,390
Quincy	16,863,477	16,924,618	16,354,061
Arizona Copper Company	13,042,000	13,727,911	18,169,096
Osceola	6,251,304	9,500,000	11,800,000
Detroit	7,016,348	8,405,138	11,428,992
Franklin	2,746,076	2,908,384	3,568,978
Atlantic	4,894,228	5,109,663	4,377,399
Tamarack Junior	2,330,000	*.........	*.........
Kearsarge	1,337,226	*.........	*.........
Wolverine	2,195,791	2,316,296	4,588,114
Central	469,243	611,172	291,339
Montana Ore	15,049,066	13,047,648	13,084,000
National	53,762	28,959	18,441
Butte & Boston	4,500,000	....	7,000,000
Colorado S. & Mg. Co	9,090,680	8,911,578	7,657,938
Butte Red. Works	4,225,647	7,883,795	9,685,088
Old Dominion	5,650,000	2,000,000	1,800,000
United Globe	2,020,565	1,241,975	2,847,460
All Other Sources	35,946,596	38,723,660	58,893,123
Total U. S. Production	479,806,183	501,370,295	535,900,232

* Consolidated with Osceola Company.



CHARLES KIRCHHOFF.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

Our Export Trade in Manufactures of Copper.

By Charles Kirchhoff,

Of the U. S. Geological Survey, and Editor of the Iron Age.

(Specially prepared for the Copper Manual.)

While our country has conquered in a decade a commanding position in the copper trade, so far as its cruder forms are concerned, our development as an exporter of manufactured copper has not kept pace. We are in the position of having become the most important source of the raw material to other industrial nations. Our manifest destiny is to become not alone the miners and smelters of the metal, but also the manufacturers who shape it into an infinite variety of goods for final consumption. No explanations are offered to account for the fact, but it may be of interest as a preliminary to establish the fact that we have grown very slowly in securing trade which our possession of the raw material, and of the plant, apparently entitle us to.

So far as the cruder forms of copper are concerned, our progress has been rapid, from one step to the other. When

Montana first appeared as a contributor to the world's supply, early in the '80s, she sent ship loads of rich ore. Thus the receipts in Great Britain of ore in 1884 were 31,316 gross tons from this country, containing about 23,000,000 pounds fine copper. How quickly this form of export was changed is shown by the fact that in 1886 the ore receipts had fallen off to 2,035 tons, and in 1889 to 224 tons. The smelting of the ore to matte locally, brought the period of very large exports in that form, culminating during the period from 1888 to 1893 inclusive. Then the general introduction of the electrolytic process led to the increasing export of crude copper in the more advanced form. The following table illustrates this:

EXPORTS OF COPPER.

	Copper Contents Matte. lbs.	Ingots and Bars. lbs.
1891	50,000,000	69,279,924
1892	66,000,000	30,515,736
1893	50,000,000	138,984,128
1894	5,750,000	162,393,000
1895	15,200,000	121,328,390
1896	22,880,000	258,473,285
1897	11,000,000	277,255,742
1898	5,420,000	291,955,905

During recent years the value of the exports of matte, pigs, bars, sheets and old copper has exceeded $30,000,000 annually. It may be profitable to contrast these figures with the returns relating to our exports of copper and brass goods. The latest official statistics show that for the fiscal year ending June 30, 1899, the exports were:

EXPORTS OF COPPER AND MANUFACTURES,

FISCAL YEAR.

	1899.	1898.	1897.
Brass, Manufactures of	$1,351,049	$1,320,093	$1,171,431
Sulphate of copper	1,173,186	475,717	....
Clocks and parts thereof	1,043,621	955,557	968,911
Manufactures of copper	1,507,186	1,105,236	909,528
Cartridges and explosives other than gunpowder	1,350,247	1,255,762	1,437,317

These figures are modest and possess a practical value as a means for gauging the magnitude of the export movement. Of course they do not in any way permit of an estimate of the quantities of copper involved. Nor is it possible to obtain anything beyond a very general impression from the statistics of export in such lines into which copper enters as a component part of some value. We know that a certain amount of copper goes into the exports of locks, hinges and other builders' hardware. This branch shows quite a satisfactory development, the export having grown from $4,152,836 in 1897 to $4,898,753 in 1899. We know too that a good deal of the metal is used in building electrical machinery, the exports of which rose from $2,052,564 in the fiscal year ending June 30, 1898, to $2,736,110 in 1899. To a certain extent, copper participates also in the rapid expansion of our export trade in many other branches of the machinery trade.

But after all, the quantities of metal involved in these export channels are small compared with the enormous amounts which we ship abroad to supply foreign manufacturers. As an example of what the latter are doing it may be noted that the exports of manufactures of copper from Germany rose from 16,543 metric tons in 1891 to 36,724 metric tons in 1898. From Great Britain the exports of manufactures of copper have fluctuated between 13,500 and 17,000 gross tons during the past eight years, while the exports of brass ranged between 10,000 and 13,000 tons. France's record of exports of manufactured copper rose to 9,350 metric tons in 1897 and 9,200 tons in 1898.

Since all of these countries depend very largely upon the United States for their raw material, it would appear that some participation in this large business on our part might be reached.

Comparative United States Output of Copper.

	1896. Tons.	1897. Tons.	1898. Tons.	1899. Tons.
January	16,072	17,637	17,744	18,624
February	17,516	16,819	17,322	19,899
March	17,922	18,283	20,381	21,918
April	17,112	17,454	22,909	19,954
May	16,733	18,805	22,741	22,082
June	16,025	19,653	19.390	22,010
July	16.595	15 844	16,052	21,333
August	16,800	17,409	19.508	22,686
September	16,977	17,443	18,764	22,715
October	18,158	17,541	21,129	23,980
November	16,365	17,427	19,850	......
December	17,619	22.291	18,482	......
	203,894	216,106	234,272	215.201
Increase	*19%	5.98%	8.40%	†9.83% to Nov. 1

* Increase over 1895.
† Increase for first 10 months of 1899 compared with same period in 1898.

The increase in United States copper production in the year 1895 was 7.25 per cent. over that for the year 1894, and the increase in 1894 was 12 per cent. over that for 1893. The increase in the domestic copper production for the year 1898, compared with the year 1893, was 64.42 per cent.

Montana's Metal Production in 1898.

We have received the following official figures from Mr. Eugene B. Braden, assayer in charge at the United States Assay Office in Helena, Montana:

	Quantity.	Value.
Gold, fine ounces................	253,867.787	$ 5,247,912.91
Silver, fine ounces..............	14,818,661.98	19,159,482.17
Copper, fine pounds.............	216,979,354.00	26,102,616.29
Lead, fine pounds...............	21,403,592.00	809,055.79
Total value of above production.............		$51,319,067.16

In the above table silver is figured at coinage rate ($1.29 per oz.); the copper at $12.03 per 100 lbs.; the lead at $3.78 per 100 lbs.

The commercial value of silver bullion for 1898 was 59 cents per fine ounce.

The above figures of production are the final summing up of the total production of precious metals in Montana for the calendar year 1898.

Visible Supply of Copper, and London Prices.

1898—1899.

Total Visible Supply of Copper in England and France, and afloat thereto from Chili and Australia, in tons of 2,240 lbs., on the following dates:

1898. Dates.	Visible Supply. Long Tons.	Spot Price "Standard" Copper.	£	s.	d.	1899. Dates.	Visible Supply. Long Tons.	Spot Price "Standard" Copper.	£	s.	d.
Jan. 1	31,955	Jan. 3	48	7	6	Jan. 1	27,896	Jan. 2	58	1	3
" 15	31,033	" 15	49	0	0	" 15	26,578	" 16	61	5	0
Feb. 1	29,746	Feb. 1	49	3	9	Feb. 1	26,015	Feb. 1	70	7	
" 15	29,076	" 15	49	12	6	" 15	25,830	" 15	74	12	6
Mar. 1	29,262	Mar. 1	50	6	3	Mar. 1	24,326	Mar. 1	71	10	0
" 15	28,008	" 15	50	5	0	" 15	25,883	" 15	68	10	0
Apr. 1	28,023	Apr. 1	50	17	6	Apr. 1	28,497	Apr. 4	71	15	0
" 15	29,536	" 15	51	8	9	" 15	26,640	" 17	73	17	6
May 1	28,891	May 2	52	1	3	May 1	26,529	May 1	77	7	6
" 15	27,529	" 16	51	13	9	" 15	27,157	" 15	78	5	0
June 1	27,789	June 1	50	18	9	June 1	30,156	June 1	76	2	6
" 15	27,355	" 15	50	5	0	" 15	29,281	" 15	75	10	0
July 1	28,101	July 1	49	18	9	July 1	29,004	July 3	77	0	0
" 15	28,695	" 15	49	17	6	" 15	28,515	" 17	76	7	6
Aug 1	29,861	Aug. 2	50	6	3	Aug. 1	33,019	Aug. 1	76	2	6
" 15	28,605	" 15	51	10	0	" 15	32,713	" 15	75	18	9
Sept. 1	28,397	Sept. 1	51	18	9	Sept. 1	32,889	Sept. 1	77	0	0
" 15	28,902	" 15	51	15	0	" 15	31,527	" 15	77	0	0
Oct. 1	27,583	Oct. 3	52	8	9	Oct. 1	28,328	Oct. 2	75	2	6
" 15	26,217	" 17	53	5	0	" 15	26,164	" 16	75	12	6
Nov. 1	25,798	Nov. 1	54	8	9	Nov. 1	26,804	Nov. 1	72	10	0
" 15	25,910	" 15	55	15	0	" 15	25,526	" 15	73	0	0
Dec. 1	26,897	Dec. 1	56	0	0	Dec. 1	25,765	Dec. 1	73	17	9
" 15	26,904	" 15	55	5	0						

Arnold Mining Company.

The capitalization of the Arnold Mining Company is $1,500,000, divided into 60,000 shares of $25 each.

There has been realized from assessments $396,308, and the value of property transferred to the company is (cost) $200,000, making a total of $596,308.

Mill started in November, 1898, and the total run for remainder of year was about one month. Copper on hand unsold on December 31, 1898, about 50 tons (75 produced). Cash on hand December 31, 1898, was about $10,000, and no debts. The above cash on hand did not of course include any part of the assessment of $3 per share called in January, 1899.

The Arnold has one shaft sunk 1,000 feet or more, and another down 100 feet. Most of the rock stamped has been drawn from the fourth, fifth, sixth and seventh levels of No. 1 shaft.

The company was consolidated with the Copper Falls Mining Company in January, 1898, and the management have been doing considerable in the way of improvements and new construction.

The company voted at the annual meeting of stockholders in May last to increase its capital stock from $1,500,000 to $2,500,000 by the issue of 40,000 additional shares at a par value of $25 each, and the issue of these shares was made discretionary with the directors. No action has yet been taken under this vote up to November 15, 1899. Operation of the stamp mill was suspended during the Summer months owing to the bursting of the dams and the loss of the water supply, but the dams have been repaired and there is now a sufficient supply of water to keep one of the two stamp heads running on nearly full time. The product for each of the months of September and October was from 50 to 60 tons. The work of sinking and drifting has continued all the present year without interruption, and will be kept up through the winter. The company is in good financial condition for some time to come.

The officers of the Arnold Mining Company are as follows:

WM. F. FITZGERALD, *President.*
JOHN BROOKS, *Treasurer.*

Directors:

WM. F. FITZGERALD, **JOHN BROOKS,**
CAMERON CURRIE, **C. L. DAVENPORT,**
WESLEY CLARK.

Address, 50 State Street, Boston.

Allouez Mining Company.

The Allouez Mine consists of over 3,000 acres of land, situated on the Mineral Range—the portion operated being adjacent to and directly north of the Kearsarge Mine. For a number of years work has been prosecuted mainly on the Allouez Conglomerate, but at the annual meeting, held in March, 1898, it was voted to explore other lodes on the property, and in order to obtain the outcrop of the Osceola lode 40 acres of land was purchased from the St. Mary's Canal Mineral Land Company.

As soon as the lode was located by test pits a three-compartment shaft was started and properly equipped with hoisting engine, shaft house, etc. As stated in Mr. Stanton's annual report of the company, in March, 1899, the shaft was then down 250 feet, and there seemed to be no good reason why continued investigation would not be successful. "Experience teaches," as he states, "that none of the amygdaloid belts of the region is productive at all points, and as we find this lode to be of normal size and character, we may reasonably expect to strike productive ground as work progresses, and we believe that this shaft should continue to be sunk, and that one or more levels should be extended on either side of it. We have the strongest inducement to explore this lode, for the reason that it underlies nearly our entire property, giving plenty of room on it for a large mine."

In accordance with the above suggestion the work has been prosecuted through the summer of 1899—the shaft being now between 500 and 600 feet deep, and drifts begun at the proper levels. The nature of the rock encountered proves the wisdom of making explorations at this point and gives encouragement for prosecuting the work, as the size and character of the lode indicates its similarity to the rock that is being profitably worked at the Osceola Mine and where the quality of the lode has almost uniformly improved as greater depth has been reached.

Time will, of course, be required to thoroughly open up and explore the lower levels, but there is ample machinery now installed to do this, and a stamp mill already on the property whenever its services are required.

Summary of receipts and expenses taken from Mr. Stanton's last annual report is as follows:

RECEIPTS.

Balance on hand, December 31, 1897	$3,694.73
Sale of old machinery in 1897	7,075.00
On account of assessment No. 24	428.40
On account of assessment No. 25	75,865.00
Interest received	193.67
Rentals at mine	2,784.00
Rent of one head stamps to Wolverine mine	5,243.30
	$95,284.10

EXPENDITURES.

Purchase of 40 acres land		$20,000.00	
Expenditure at Mine—			
Superintendence and labor	$12,238.97		
Timber, lumber, fuel and supplies	7,552.88		
Fire insurance	1,187.50		
Taxes	1,388.12		
Telephone line	110.82		
Sundry expenses	262.19		
		22,740.48	
Salaries at New York office		1,500.00	
General expenses		839.27	
			45,079.75
Leaving balance on hand Dec. 31, 1898			$50,204.35

Officers of the Allouez Mining Company elected March 14, 1899, are:

HARRY F. FAY, *President.*

WALTER B. MOSMAN, *Secretary and Treasurer.*

Directors:

JOHN STANTON,
JESSE LEWISOHN,
HERBERT A. TUCKER,
WALTER B. MOSMAN,
HARRY F. FAY,
GODFREY MORSE,
JOHN C. WATSON,
STEPHEN R. DOW,
JAMES CHYNOWETH, of Michigan.

Office, 60 State Street, Boston, Mass.

Production of Copper in Montana.

There was a decrease in the copper production of the State of Montana during the year 1898, chiefly on account of a fire at the Anaconda mines, which lessened the output of that company. The production of copper in that State, however, exceeds that of any other district, and Montana continues to lead the world as a producer of copper.

Year.	Pounds Fine.
1882	9,058,284
1883	24,664,346
1884	43,093,054
1885	67,797,864
1886	57,611,621
1887	78,699,677
1888	97,897,968
1889	98,222,444
1890	112,980,896
1891	112,063,320
1892	163,206,128
1893	155,209,133
1894	183,072,756
1895	190,172,150
1896	232,096,483
1897	237,158,540
1898	216,979,334

Imports of Copper into the United States.

Imports of copper into the United States, as per official Government returns were as follows, in pigs, bars, ingots, etc.:

Free of Duty.	Year 1898. Pounds Fine.	Year 1897. Pounds Fine.	Year 1896. Pounds Fine.
Pigs, Bars, Ingots, Etc.	*54,166,467 lbs.	16,578,420 lbs.	11,397,273 lbs.
Ore and Regulus......	3,090 tons.	5,173 tons.	2,731 tons.
Total Value	$4,786,759	$2,270,606	$1,310,549

Free of Duty.	Twelve Months Ending June 30, 1899.	Twelve Months Ending June 30, 1898.	Twelve Months Ending June 30, 1897.
Pigs, Bars, Ingots, Etc.	*51,108,228 lbs.	40,722,945 lbs.	11,504,382 lbs.
Ore and Regulus......	5,250 tons.	4,648 tons.	3,421 tons.
Total Value...........	$6,777,999	$3,826,281	$1,544,692

Free of Duty.	First Ten Months, 1899.
Pigs, Bars, Ingots, Etc.	53,543,983 lbs.
Ore and Regulus......................................	19,916 tons.
Total Value.....................	$9,052,633

* A large proportion in transit to Europe.

Approximate Distribution by Producing States and Territories of the Product of Gold and Silver in the United States for the Calendar Year 1898, as Estimated by the Director of the Mint.

State or Territory.	Gold, Fine Ounces.	Gold, Value.	Silver, Fine Ounces.	Silver, Coining Value.	Total Value.
Alabama...	242	$5,000	100	$129	$5,129
Alaska.....	122,137	2,524,800	92,400	119,467	2,644,267
Arizona....	119,249	2,465,100	2,246,800	2,904,954	5,370,054
California..	756,483	15,637,900	642,300	830,448	16,468,348
Colorado ..	1,122,073	23,195,300	22,815,600	29,498,958	52,694,258
Georgia....	6,221	128,600	500	646	129,246
Idaho......	83,055	1,716,900	5,073,800	6,560,065	8,276,965
Iowa	5	100	....	....	100
Maryland ..	29	600	....	....	600
Michigan ..	5	100	32,400	41,891	41,991
Minnesota .	5	100	....	....	100
Montana...	248,014	5,126,900	14,807,200	19,144,663	24,271,563
Nevada....	144,859	2,994,500	805,000	1,040,808	4,035,308
New Mexico	26,074	539,000	425,300	549,883	1,088,883
North Carolina......	4,064	84,000	700	905	84,905
Oregon.....	56,966	1,177,600	130,000	168,081	1,345,681
South Carolina......	5,041	104,200	300	388	104,588
South Dakota.......	275,723	5,699,700	152,300	196,913	5,896,613
Tennessee..	43	900	....	....	900
Texas......	14	300	472,900	611,426	611,726
Utah.......	110,556	2,285,400	6,485,900	8,385,810	10,671,210
Virginia ...	218	4,500	....	....	4,500
Washington	37,065	766,200	254,400	328,921	1,095,121
Wyoming...	257	5,300	100	129	5,429
Total	3,118,398	$64,463,000	54,438,000	$70,384,485	$134,847,485

Bureau of the Mint, June 17, 1899.

NOTE.—The Commercial Value of Silver Bullion for 1898 was 59 cents per Fine Ounce, while for 1897 it was 60 cents.

French Copper Consumption.

The following returns show the movement of copper in France during the periods named, in tons of 2,240 pounds fine:

	1899. First Ten Months. Tons.	1898. Twelve Months. Tons.	1897. Twelve Months. Tons.	1896. Twelve Months. Tons.
Imports from United States....	18,829	22,753	26,165	21,998
Imports from England	5,504	5,730	4,122	4,553
Imports from Other Countries .	12,261	14,684	13,040	14.360
	36,594	43,167	43,327	40,911
Difference in Stocks, Dec.........	215	Inc., 515	Inc., 379	Inc., 589
Exported	2,900	.....	.....	.....
Apparent Consumption........	33,909	42,652	42,948	40,322

German Copper Consumption.

The following table is made up from the official returns, showing the movement of copper in Germany, in tons of 2,240 pounds fine:

	1899. First Nine Months. Tons.	1898. Twelve Months. Tons.	1897. Twelve Months. Tons.	1896. Twelve Months. Tons.
Imports	55,057	78,010	71,771	59,284
Exports	8,838	10,607	9,346	8,963
Consumption of Foreign Copper (Exclusive of Pyrites).........	46,219	67,403	62,425	50,321

Mountain Copper Company, Limited.

This company conducts mining operations in the State of California, and during the year 1898 produced 221,805 tons of ore said to average 8.42 per cent. copper against 105,000 tons, averaging 8.36 per cent., in 1897. The smelting works turned out last year 10,721 tons of copper matte derived from the treatment of 168,541 tons of ore, which compares with 7,238 tons of matte from 97,185 tons of ore in 1897.

The company reports a net profit of £163,235 in 1898 against £63,145 in 1897. The successful operations enabled the directors to pay the sum of £93,750 in dividends and place £70,000 to the credit of reserve and depreciation as the result of last year's business. This is an English corporation, with headquarters in London. The quantity of fine copper put on the market in 1898 was reported at 8,273 tons, compared with 6,025 tons in 1897.

The office of the Mountain Copper Company, Limited, is No. 3 Lombard street, London. The American agents for the company are Vivian Bond & Co., New York.

Wyandotte Copper Company.

The Wyandotte Copper Company is a recently organized company, under the laws of the State of Michigan, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each.

The property comprises 1,040 acres on the south range of the Lake Superior copper belt, and consists of the entire section 21, E. ½ of S. E. ¼ of 20, and S. ½ of section 16, all in 52-36. The property is adjacent to the Winona, on the northeast, and carries the Winona lode for a mile and three-quarters.

The development of the property was begun last Spring. The property carries the outcrop of the Winona lode, which has shown up so favorably on that property. Eight dollars per share has been paid in, and the treasury had a fund of $300,000, which was expected to be ample to place the property on a producing basis.

The officers of the company are as follows:

HENRY STACKPOLE, *President.*
WM. O. GAY, *Treasurer.*
Directors:

HENRY STACKPOLE, **WILLIAM OTIS GAY,**
MATTHEW VAN ORDEN, **IRVING J. STURGIS,**
J. MAURICE MEREDITH, **MATTHEW VAN ORDEN.**

Office, 70 State Street, Boston.

White Knob Copper Company.

This is a new company, incorporated February 21, 1898, under the laws of the State of West Virginia, with a capital stock of $5,000,000, divided into 50,000 shares of the par value of $100 per share.

The property is located in Idaho. Sinking has been reported, and it is understood to have resulted in a good showing of copper.

The shares of the company were listed on the Boston Stock Exchange March 10, 1899.

The officials of the White Knob Copper Company are as follows.

E. J. MATTHEWS, *President.*
W. K. MATTHEWS, *Vice-President.*
C. G. FUNK, *Secretary and Treasurer.*

Consolidated Mines, Limited.

The Consolidated Mines, Ltd., is incorporated under the laws of the State of Idaho with a capital of $1,000,000, divided into 1,000,000 shares of the par value of $1 each, of which 300,000 shares are set aside for the use of the company.

From a recent prospectus issued by the company we learn that the property of the Consolidated Mines, Ltd., consists of 14 full-sized claims of 1,500 feet by 600 feet each, or a total area of 280 acres, viz.: The Empire, Grand Central, Tuscararra, Grand Prize, Blue Bird, Yellow Metal, Easter, Climax, Clown, Little Alice, Middle Man, Hidden Treasure, Copper Rockless and Wide West, situated in the Seven Devils Mining District, Washington County, Id.

The formation is granite and limestone. The veins are principally fissure, with an easterly and westerly course, and dip to the south at an angle of 30 to 60 degrees from the horizontal.

Recent official information was to the effect that development work on the property was limited in most cases to a 10-foot shaft on the vein, exposing very high grade ore on a majority of the claims. Development was reported being vigorously pushed on the Tuscararra and the extreme southerly group of claims with very flattering results. Nature developed the Empire Mine to a depth of 150 to 200 feet by a landslide, exposing a vein of copper ore from 4 to 6 feet in width of very high grade.

The ore is said to be a hard quartz, carrying malachite, or peacock; asurite and pyrites of copper, gold, silver and iron, and is an ideal concentrating or smelting ore.

Assays of ore from the different claims were reported to show from 1.6 per cent. up to 20.1 per cent. copper, with considerable silver and gold.

The company says that the cost of milling will not exceed $2; mining, $1; total cost, $3 per ton. In case of smelting or matting, the cost will not exceed $6 per ton, including mining.

In regard to railroad facilities and fuel supplies, the following official report is made:

"The Northwestern Railroad is building down Snake River, and will be from one-half to two miles west of this group. The Pacific & Idaho Northern Railroad will pass six miles east of the southerly 13 claims, and one-half mile west of the Empire Mine. Grading and track laying was being vigorously pushed on both lines of road. The town of Cuprum is two miles east of the group of 13 claims, and the town of Helena is one-half mile west of the Empire Mine.

"There is ample timber in close proximity to the mines for fuel and all mining purposes. A saw mill within one-half mile, with a capacity of 25,000 feet per day, will furnish lumber at from $6 to $12 per thousand. There is an abundance of water power in Indian Creek, a few hundred feet from the property, for all purposes, and if there is any question about the volume of water from this stream, Snake

River, one-half mile distant, will afford almost unlimited power at very little expense."

The "Idaho Daily Statesman," published at Boise, Idaho, October 2, 1899, contains the following regarding awards of premiums at the recent Idaho Inter-Mountain fair at that place:

"The gold medal for the finest private general mineral exhibit was awarded to the Consolidated Mines, Ltd., managed by William McKinley. Among the exhibits of this company were the following: From the company's mines, 14 in number, ore assaying 20 per cent. copper and $4 gold and silver."

Attention is being directed to the mineral resources of the Northwest, and among the purposes of this company is that of locating and developing promising mining claims, and the furnishing of expert reports upon mining properties for the benefit of its stockholders at a nominal fee.

The officers of the Consolidated Mines, Ltd., are as follows:

WM. McKINLEY, *President and Treasurer.*
R. M. DAVIDSON, *Vice-President.*
M. U. McKINLEY, *Secretary.*

Directors:

R. M. DAVIDSON,
H. E. NEAL,
M. U. McKINLEY,
C. C. CAVANAH,
WM. McKINLEY.

Address, Boise, Idaho.

Champion Copper Company.

This company is of recent organization, with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 per share. The Champion is the first company to be organized on the lands of the Copper Range Company for mining purposes.

Its officers are the same as those of the Copper Range Company.

Tecumseh Copper Company.

The Tecumseh was incorporated in March, 1880, with a capital of $1,000,000, divided into 40,000 shares of the par value of $25 each. It is located south of the Osceola Mine. The capital of the company was increased in the Spring of 1899 to $2,500,000, divided into 100,000 shares, with 20,000 shares to remain in the treasury of the company.

Officers of the company are:

J. C. WATSON, ***President.***
D. L. DEMMON, ***Secretary and Treasurer.***
Office, Boston.

Wahnita Copper Mining Company.

This company was organized early in 1899 with a capital of $2,500,000, divided into 100,000 shares of the par value of $25 each. The property is located in Michigan, where copper was discovered on the lands of the company more than 40 years ago.

National Mining Company.

The National Mining Company increased its capital stock from 40,000 to 100,000 shares, or $2,500,000, in the month of March, 1899. A previous assessment of $5 was rescinded, and of the new capital 25,000 shares were reserved for working capital.

United Verde Junior Copper Mining Company.

This is one of the new copper companies, with properties located near Jerome, Ariz. It has a capital stock of $2,000,000, divided into 200,000 shares of the par value of $10 per share. The company has been incorporated under the laws of the State of West Virginia.

It is officially stated that the properties consist of six claims, covering about 120 acres, and that these are located in the same ore belt as the celebrated United Verde and Equator mines, and about midway between them. The claims are known as the Copper Glance, Deer Trail, Red Willow, Bellevue, Reservation and Columbian.

In describing the property the company states that 1,000 feet of development has been done, which exposed high grade ore. This work consists of several shafts and tunnels, the principal development being two tunnels 233 and 250 feet in length, and with every opening said to expose ore.

Last September the company reported that they had cut a large body of copper ore in the lowest tunnel at least 300 feet before ore was expected. Further development is proposed, and the building of an adequate smelter has been mentioned as embraced in the plans for the future. The company began active operations in May, 1899, and since then have had the property all surveyed and taken steps to procure Government patents. The General Manager reports that they have already cut very high grade ore, and that they have four strong ledges carrying copper.

Officers and Directors of the United Verde Junior Copper Mining Company are as follows:

B. F. PEACH, JR., *President.*
H. N. FISHER, *Vice-President.*
A. W. MANSUR, *Treasurer.*
T. S. MORGAN, *Secretary.*

FREDERIC TABER,
J. W. DEANE,
W. G. REED,
EDWIN WALLACE.

Office, 60 State Street, Boston, Mass.

Transfer Agent and Depository, American Loan and Trust Company, 53 State Street, Boston, Mass.

Boston & British Columbia Copper Mining and Smelting Company.

This company is incorporated under the laws of the State of Maine and registered in the Province of British Columbia, Can. The following are the official statements by the company regarding the property:

"This company owns the valuable copper properties known as the Standard group of copper mines, consisting of seven full mining claims, containing approximately 375 acres of mineral land, all located in the Revelstoke mining district, in the West Kootenay district of British Columbia, Can.

"Each of these seven properties is 1,500 by 1,500 feet in extent.

"Title is absolutely perfect.

"There are five distinct parallel copper lodes running through these claims; the narrowest ledge averages 14 feet in width and the widest ledge at the Standard Mine will run from 45 to 75 feet in width. There are about three and one-half miles of copper lode matter on this property owned by the company.

"A large amount of money has already been expended on development work. This work has been carried on for the past two years, and has been continued up to date. Present development in the tunnels, shafts, crosscuts and winzes discloses several huge veins of mineral of great value in copper.

"The ore bodies have been thoroughly sampled on the surface, and in the different levels as the work has progressed, and the value of copper to the ton of ore has been learned from time to time by assays and mill tests, and the veins and lodes grow richer in copper as depth is attained.

"With permanent veins and rich lodes, as large as shown on the map, at a depth of 100 feet, a general sample of the ore body shows an average of copper of 23½ per cent. to the ton. In estimating the profits of the company we have figured only on a basis of 12 per cent. copper."

The company has 300,000 shares of the par value of $10 per share, fully paid and non-assessable. Treasury stock of the company has been offered at $2.50 per share.

The officers of the Boston & British Columbia Mining and Smelting Company are as follows:

JOHN F. MERRILL, ***President.***
SETH E. BENSON, *First Vice-President.*
THEODORE W. FRENCH, *Second Vice-President.*
GEORGE W. FRENCH, *Secretary and Treasurer.*

Managers.

GEORGE W. BEACH, WILLIAM CROSBIE,

Office, International Trust Company Building, Boston.

Colonial Copper Company.

This is one of the recently incorporated copper companies. The capital stock of the Colonial Copper Company is $5,000,000 in shares of $1 each, 5,000,000 shares full paid and non-assessable. The property of the company consists of 416 acres, located in Peterboro County, Can.

It has been officially stated that the company owns the property free and clear, and that there is no preferred stock or bonded indebtedness.

As an inducement to the investor the company has an arrangement with the American Underwriters' Agency whereby the latter have agreed to purchase one-half the amount of guaranteed stock within a specified time at par bought from the Colonial Copper Co. The company has recently been offering for sale a limited amount of the guaranteed stock at 50 cents per share to furnish the necessary working capital to develop and carry on the enterprise. Stock of the company without the guarantee has been offered at 25 cents per share.

An examination of the property has been made and a report rendered. Samples of ore taken from the property were said to have yielded from 6 per cent. to 24 per cent. copper. It was furthermore stated in the report that as to the permanency of the ore deposit, connected as it is with an eruptive dyke, it undoubtedly possesses great depth and permanence.

Officers of the Colonial Copper Company are as follows:

J. A. HANWAY, *President and General Manager.*
JAS. A. YOUNG, *Vice-President.*
A. MUNGER, *Treasurer.*
H. D. HANWAY, *Secretary.*
ELISHA FENN, M.D., *Metallurgist.*

Address, 32 Broadway, New York.

The Great Lakes Copper Company.

This company has been incorporated under the laws of the State of West Virginia, with a capital stock of 600,000 shares of the par value of $5 each. The mines are in Sudbury District, Ontario, Can.

The property of the Great Lakes Company is said to comprise the following: The Mount Etna, situated 25 miles northeast of Sudbury; the Trillabelle, situated west of Sudbury, and the Mt. Nickel, at Sudbury.

Some development work has been done, and reports say that copper, nickel, gold, silver, lead and cobalt are found on the property. The mine and smelting plant was said to be in operation in November, 1899.

Officers of the Great Lakes Copper Company are as follows:

JOHN McKINLEY, *President and General Manager.*
ALBERT A. GLEASON, *Vice-President.*
HORACE WILLISTON, *Secretary.*
ROBERT S. BICKFORD, *Treasurer.*

Directors:

B. HOWARD COFFIN,	ALBERT A. GLEASON,
JOHN W. BEMIS,	HORACE WILLISTON,
BYRON ROSE,	ROBERT S. BICKFORD.

Office, 60 State Street, Boston, Mass.

Boston and Carolina Copper Mining Company.

This company owns 1,285 acres in Person and Granville counties, N. C., where it is reported copper ore of 10 per cent. and upward has been taken from the workings. The company was doing development work this year, but incidentally shipping some copper to market. Some ore has been shipped and sold which showed the management a good net profit. The company express confidence that they have a rich copper belt to work, and during preliminary operations were said to be more than paying expenses.

The Brass Industry of the United States.

The brass industry of this country has developed into enormous dimensions, and has recently enjoyed a period of unparalleled prosperity. The centre of this industry is the Naugatuck Valley, Connecticut. During the year ending July 1, 1899, it is estimated that the great mills situated in this valley between Bridgeport and Torrington consumed 125,000,000 pounds or more of copper. It is said that this district produces about 90 per cent. of all the sheet brass made in the United States.

Among the largest and best known of the brass and copper mills in the Naugatuck Valley is that of the Ansonia Brass & Copper Company. This corporation gives employment to over 1,000 hands at their four large factories at Ansonia, and is recognized as one of the most progressive and prosperous companies in the trade. They manufacture in large quantities sheet brass, sheet copper, wire, tubing, etc. They make a specialty of many other manufactured articles, and their display of brass bedsteads is a revelation of skill and beauty. The Ansonia Brass & Copper Company are also the manufacturers of the celebrated metal called Tobin bronze, which formed an important part in the construction of the cup defender Columbia.

The principal characteristics of Tobin bronze are great tensile and torsional strength, toughness and uniformity of texture. At a dead red heat it can be readily forged into bolts and nuts, either by hand or machinery.

A little above Ansonia are plants of the Seymour Manufacturing Company and the New Haven Copper Company. The latter concern does not manufacture brass, confining itself entirely to the handling of copper. The Seymour Manufacturing Company have a large and efficient mill, where they employ a great many hands and consume large quantities of copper ingots and bars in the manufacture of sheet brass and copper wire.

Passing still further on, the celebrated city of Waterbury is reached, where are located the immense plants of Benedict & Burnham Manufacturing Company, Plume & Atwood Manufacturing Company, Waterbury Brass Company, Holmes, Booth & Haydens, Randolph-Clowes Company and the Scovill Manufacturing Company.

The extensive plant of the Benedict & Burnham Manufacturing Company, located in the city of Waterbury, Conn., is one of the largest and best equipped in the world.

The business of this company dates back to the year 1812, when Aaron Benedict, its founder, started the enterprise which has passed through successive stages of development as the years have gone by until reaching the magnificent position among the great manufacturing establishments which it now occupies.

This corporation has always been highly favored in having men at its head who have been endowed with the talent and capacity for the successful management of a great and constantly growing industry. Besides being thoroughly equipped for the production in great volume and variety of the different alloys of copper, brass, gilding metal and German silver in sheets and wire of all sizes, brazed and seamless tubing of brass and copper, and a great variety of brass articles too various to enumerate, the company has during a comparatively recent period added to its list of manufactured articles that of seamless drawn '"nickel-silver" tubing.

This metal is found to supply a desideratum long needed. It presents a perpetual brilliant "nickel-silver" surface which cannot be worn nor rubbed nor scraped away. It is one solid piece of the same white "nickel-silver" metal clear through to the inside of the tube. The more it is rubbed the better it looks.

The tensile strength of the "nickel-silver" manufactured by Benedict & Burnham Manufacturing Company is another important feature characterizing it. The tensile strength of the tubing made from this metal is from 50 to 100 per cent. greater than that of brass. It is made by hot-rolling—by the same process as seamless copper and brass tubing. The ornamental character of "nickel-silver" tubing renders it peculiarly available for exposed plumbing in fine residences, and even from the standpoint of economy it would be preferable in large office buildings. The fact that Benedict & Burnham Manufacturing Company are the sole manufacturers of this seamless "nickel-silver" tubing adds another very valuable article to the list of its important products.

The Plume & Atwood Manufacturing Company is one of the foremost in its line, with very large factories at Waterbury and a rolling mill at Thomaston. The company is one which makes it a point to keep abreast of the times in this energetic age, and which has the up-to-date facilities to meet an enormous demand for the different articles which it manufactures. They not only turn out large quantities of rolled metal, but manufacture various articles of a high grade, and through their different houses are extensive distributers of their products.

In Waterbury are also located the factories of Holmes, Booth & Haydens, who have a most complete plant for the manufacture of brass and copper. The Scovill Manufacturing Company have erected a new office building recently, and they conduct a large business at their establishment.

The Randolph-Clowes Company is another important brass and copper industry, with several large buildings included in their plant.

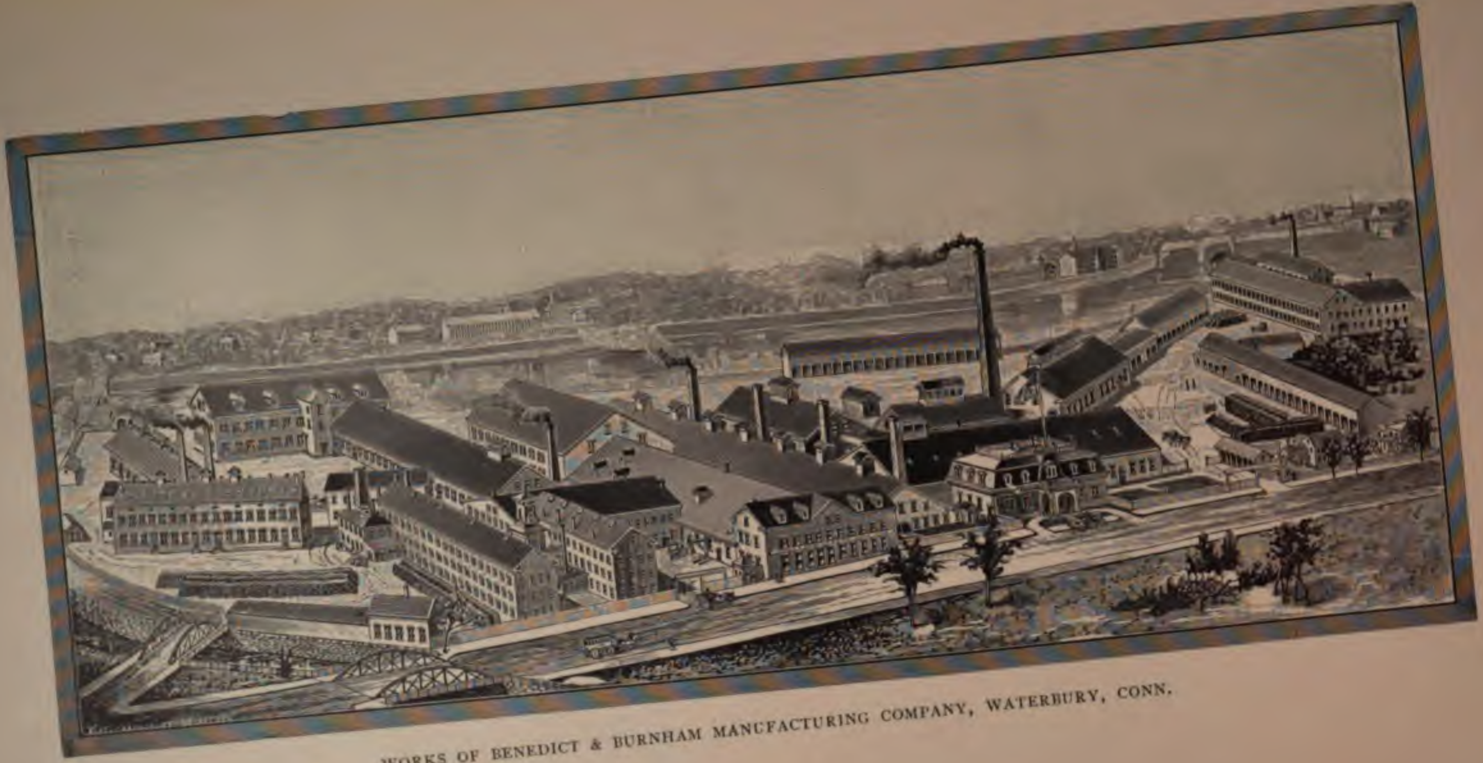
The Bridgeport Brass Company, at Bridgeport, Conn., have a splendid mill also, and are a highly prosperous concern.

The Waterbury Brass Company erected one of the finest wire mills in the country a few years ago, and altogether this company has an imposing group of buildings fully equipped for the manufacture of brass, wire, etc. This corporation is one of the most successful in the valley, and their various departments melt down large quantities of copper every month.

At Torrington the Coe Brass Manufacturing Company have established a gigantic industry, where vast quantities of brass and copper products are turned out annually. This plant is one of the largest in the world, and is splendidly equipped for the manufacture of copper, brass, German silver, and all alloys of zinc, copper, nickel and other metals. The officers and managers of this company direct and administer its affairs most successfully. The corporation have other extensive works at Ansonia, Conn., and the combined facilities of the two plants enable the company to carry a large stock whereby orders can be promptly filled.

While it is true that Connecticut is the principal centre of the brass industry, the middle West is well represented in the manufacture of brass and copper by the Detroit Copper & Brass Rolling Mills, located at Detroit, Mich. This company was organized in 1880, and works were in running order June 1, 1881. Original capital was $100,000, which was subsequently increased as the demands of the business made it necessary to $200,000, then $500,000, and later to $750,000, which is the present paid-in capital.

The Detroit Copper & Brass Rolling Mills are said to have the largest and best equipped copper mill in the country, and one of the best equipped brass mills. They have been running full in all departments, and employ 500 men. The plant comprises about 15 acres of land and 15 buildings, the main mill being 700 x 140 feet. There are 10 engines, the largest a Cross compound Corliss of 2,200 horse-power. The largest rolls have a capacity of 12 feet by 33 inches. The Vice-President and Manager is a leading and influential member in the Brass Association, which meets monthly in New York.



WORKS OF BENEDICT & BURNHAM MANUFACTURING COMPANY, WATERBURY, CONN.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

There are other important brass and copper mills, among which are the Brooklyn Brass & Copper Company at Brooklyn, N. Y.; Hendricks Brothers' Copper Rolling Mill at Belleville, N. J.; H. K. & F. S. Benson's brass and copper mill at Glen Ridge, N. J., and the Rome Brass & Copper Company, at Rome, N. Y., etc. Each of these is in successful operation. A list of the brass and copper mills of the country was published in the first volume of the "Copper Manual."

Rio Tinto Company, Limited.

The annual report of this company shows a total production of pyrites during the year 1898 of 1,465,380 tons, the copper contents of which averaged 2.852 per cent. This was the largest output of pyrites in the history of the Rio Tinto, and yet the reserve heaps at the mines at the end of the year were estimated to contain 114,708 tons of fine copper, against 111,406 tons fine on December 31, 1897. The copper treated at the mines and contained in pyrites shipped amounted to 33,882 tons fine. The reserve heaps are constantly being replenished, the cost of which stands in the company's books at £4 6s. 10d. per ton fine.

The operations of the company were most successfully carried on, and the financial gains during the year were marked in character. Profit on sale of produce for 1898 was £1,218,517 1s. 4d., or about 7 98-100 cents per pound on the total sales. After providing £58,420 for redemption of 4 per cent. mortgage bonds, and placing £50,000 to the reserve fund, and deducting other items, the net profit for 1898, including brought down from previous year, was £863,809 7s. 10d., or £111,646 1s. 4d. more than for 1897. Dividends amounting to £850,416 13s. 4d. were paid out of the year's earnings, or 5 per cent. on the preference shares and 47½ per cent. on the ordinary shares. The amount of 4 per cent. first mortgage bonds now outstanding is £3,431,440. The Rio Tinto profits last year were more than double what they were in 1895, and nearly four times as much as in 1894.

The copper sent to market in refined and sulphate was 1,351 tons less, while in pyrites it was 1,015 tons more than in 1897. There was an excellent demand for the company's products throughout the past year.

The copper produced during the year 1898 by treatment at the mines was 20,426 tons, and the copper in pyrites shipped amounted to 13,456 tons, making a total of 33,882 tons.

The reserve fund of the Rio Tinto now amounts to £190,000, against £140,000 in 1897. At the end of 1898 the company had in cash at banker's and on deposit in London £507,082, besides £24,525 in cash in Spain and elsewhere.

The Rio Tinto Company has a capital of £3,250,000, divided into 325,000 5 per cent. preference shares of £5 each, and 325,000 ordinary shares of £5 each.

Mr. Hugh M. Matheson, who presided as Chairman of the company for nearly a quarter of a century, died February 8, 1898. Mr. Geo. N. Thomson, who was Secretary of the company, also died in January, 1898. Both these vacancies have since been filled.

During the past two years the Rio Tinto has paid in dividends a total of £1,482,059. In addition thereto it has also paid on November 1, 1899, an interim dividend of 2s. 6d. per share on the preference shares, and 35s. per share on the ordinary shares.

The officers of the Rio Tinto Company, Ltd., are as follows:

Directors:

J. J. J. KESWICK, *Chairman.*

WM. DUFF BRUCE, M.I.C.E.,	JOHN MACFARLAN,
JOHN M. MACDONALD,	LIONEL C. G. SARTORIS.

MAJOR-GEN. SIR ARTHUR E. A. ELLIS, K.C.V.O., C.S.I..

Joint Secretaries.

J. GORDON MACLEOD, SAM. J. BOWES.

Offices, 30 St. Swithin's Lane, London, England.

Tharsis Sulphur and Copper Company, Limited.

This company operates mines at Tharsis, Calanas and Lagunazo, in Spain. During the year 1898 the total production yielded by this property amounted to 586,090 tons of mineral (exclusive of cupreous sterile), against 565,949 tons in 1897, being an increase of 20,141 tons.

The net profit from last year's operations was £349,963 11s. 1d., or about £39,006 more than in 1897. A dividend of £343,750, or 11s. per share, equal to 27½ per cent. on the capital of the company, was paid on May 10, 1899, out of last year's earnings. Total dividends during the thirty-two years of the company's existence amount to £6,352,182.

The production of refined copper by the Tharsis Company in 1898 was 11,147 tons, being an increase of 414 tons over the output for 1897.

After deducting the payment of the May, 1899, dividend of £343,750 the company had the large sum on hand of £410,392, and the directors have in contemplation the purchase of additional mining property if the right thing should be found either in Spain or elsewhere.

The policy of the Tharsis Company has been to sell as they produce, and they have had a most successful career. Sir Charles Tennant, Bart., the Chairman of the company, is the only remaining survivor left of the original founders and early administrators of the enterprise.

The Tharsis Company has a capital of £1,250,000, divided into 625,000 shares of £2 each, full paid. The rate per cent. on its dividend capital from the formation of the company aggregates 595 2-3 per cent. The average dividend up to May, 1899, has been 18½ per cent. During the period of operations the company has written off their original values in Spain and Great Britain the sum of £2,077,530, leaving the total fixed property and plant standing now at the low value of £463,228, against an original value of £2,540,759 6s. 9d.

The following are the officials of the Tharsis Sulphur and Copper Company, Ltd.:

SIR CHARLES TENNANT, BART., *Chairman.*
WILLIAM P. RUTHERFORD, *Tharsis, General Manager.*
DAVID BARLAS, *Secretary.*

Directors:

M. ALFRED DOMINIQUE MARIE MESSEAU,

HUGH BROWN,	**JAMES COUPER,**
M. LOUIS OSCAR SCHMIDT,	**SIR CHARLES TENNANT, BART.,**
HUGH BECKETT,	**HOLBROOK GASKELL,**
JAMES C. STEVENSON,	**SIR JAMES KING,**

M. JACQUES H. C. DE BERLY.

Office, 136 West George Street, Glasgow, Scotland.

The Cape Copper Company, Limited.

This company's mines are located in Africa, with an English management. Operations carried on last year resulted in larger profits than during any former period in the history of the company.

The profit and loss account for the year ending April 30, 1898, in the Cape, and to August 31, 1898, in London and Newfoundland, shows a credit balance of £360,389 6s. 10d., including £142,043 14s. 2d. brought from the previous year. This has been dealt with as follows: £3,213 6s. has been paid in income tax, and £163,875 in dividends; £10,000 has been transferred to the reserve fund, £10,000 to the landed estates and buildings sinking fund, and £10,000 to the smelting and sulphate works sinking fund.

The above-named transfers left a balance of £153,301 0s. 10d. to be carried forward, out of which a final dividend of 7s. per share was paid January 2, 1899.

Mining operations during the twelve months ending April 30, 1898, resulted as follows: Ookiep Mine gave a product of 26,598 net dry tons. The underground reserves at this mine were reduced, the same being estimated at 24,000 tons of 21 per cent., compared with 31,200 tons of the same percentage at the close of the previous year.

Spectakel Mine produced during the twelve months 1,400 dry tons.

Nababeep Mine.—The sinking of a new shaft was commenced at this mine toward the end of 1897, and has been completed to a depth of over 11 fathoms. The reserves laid open by the levels and sinkings are estimated at 194,880 tons of 5 per cent. net dry assay.

Koperberg Mine yielded a good supply of ore, in some parts of five tons copper ore per fathom, and the output of ore has been larger than in previous years.

The quantity of ores treated at the smelting works was 24,513 tons, and the regulus, was in excess of that for any former period. The assay of the regulus was the same as the previous year, viz.: 51.8 per cent. copper.

The company also operates mines at Tilt Cove, Newfoundland, where the work has gone on regularly. The ore reserves available at the East Mine were estimated at 217,000 tons, and at the West Mine 3,594 tons. Shipments of copper ore and regulus from Tilt Cove during the year ending August 31, 1898, amounted to 55,396 tons.

The operations of the Tilt Cove property produced during the year a gross profit of £35,724 18s. 9d.

The report of the directors of this enterprise is one of the fullest and most detailed we have seen, and makes a pamphlet of 94 pages. The balance sheet rendered by the directors is audited, and the shareholders are made fully acquainted with the entire administration of the property. This report would serve as an excellent model for American companies.

Officers of the Cape Copper Company, Ltd., are as follows:

EDMUND A. PONTIFEX, *Chairman.*

JOHN GALSWORTHY,	T. RUSSEL KENT,
HANBURY BARCLAY,	JOHN GALSWORTHY, JR.,

JOHN TAYLOR.

Office, 9 Queen Street Place, London, England.

Mason & Barry, Limited.

The directors of this property at the seventh annual meeting of the shareholders, held in London, May 8, 1899, reported that the total quantity of ore broken and raised at the mine during the year 1898 was 169,775 tons, as against 177,549 tons in 1897. The shipments during the same period (inclusive of ore from the Cementation Works) amounted to 285,441 tons, as against 267,290 tons in the previous year. The quantity of ore sold and invoiced for its sulphur value during 1898 amounted to 284,880 tons, as against 272,498 tons in 1897.

After writing off in the mine books for depreciation of works, plant, etc., the sum of £36,823, and allowing for the variation in the estimated value of the stocks on hand in Great Britain and on the Continent and in Portugal on December 31, 1898, and after deducting management expenses and income tax, the net profits on working account have amounted to the sum of £37,850 9s. 1d., to which has to be added the sum of £8,202 4s. received as dividend on La Sabina shares, and the sum of £6,513 4s. 1d. from sundries, making together a total profit for the year 1898 of £52,565 17s. 2d.

The present company was incorporated in 1892, and the registered capital is £420,000 in 210,000 shares of £2 each. Of this amount 24,828 shares are unissued. The property has been operated for many years. A dividend of 5s. per share was paid May 18, 1898, or £46,293.

In September, 1898, the company obtained the sanction of the court to the repayment of £1 per share, and consequent reduction of capital to that extent. The cash assets December 31, 1898, amounted to £130,903. Stocks of ore and copper precipitate at the end of last year were valued at £115,717.

Officers of the Mason & Barry, Ltd., are as follows:

Directors:

SIR FRANCIS TRESS BARRY, Bart., M. P., *Chairman.*
JAMES FRANCIS MASON, *Deputy Chairman.*
JAMES MASON, **FRANCIS RICARDO,**
HENRY EDWARD BEDDINGTON,
CAPT. THOMAS BRIDGES HEATHORN, R. A.,
DOUGLAS HERRON BARRY.

Office, 87 Cannon Street, London, England.

The Namaqua Copper Company, Limited.

This is a South African enterprise, at Concordia, Mamaqualand, and has been in operation for a number of years. The company has a capital of 100,000 shares of £2 each.

During the year ending December 31, 1898, the output amounted to 9,110 tons of copper ore, being an increase of 963 tons over 1897.

The net profit for the year, after providing for depreciation and adding the balance brought forward from the preceding year, was £60,677 19s. 1d.

The shareholders received an interim dividend of 6¼ per cent., which absorbed £11,791 7s. 6d., and a further dividend at the rate of 16¼ per cent., absorbing £30,657 11s. 6d., making a total for the year of 22½ per cent.

The estimated quantity of ore reserves were 39,400 tons of about 26 per cent. There were also about 10,000 tons slime ore of from 8 to 10 per cent. The mines are valued at £149,086.

The following are the officials of the Namaqua Copper Company, Limited:

Directors:

CHARLES HOWARD, JOHN NAPIER,
SIR JOHN H. MORRIS, K. C. S. I., T. V. ANTHONY.
F. J. MIRRIELESS, *Manager.*
C. LEWIS BENNETT, *Secretary.*
Office, London, England.

Calumet & Hecla Shareholders.

The total number of shareholders in the Calumet & Hecla Mining Company number nearly 3,000, and below will be found the official list of the larger shareholders recorded in the year 1899. The following list of 116 Calumet & Hecla stockholders embraces those holding 150 shares or over:

Austin, E., Boston	**200**
Ames, S. R., Cambridge	**245**
Agassiz, Alex., Newport	**1,054**
Bartol, C. A., Boston	**215**
Bancroft, J. C., Milton	**1,000**
Buckley, M., Detroit	**195**
Briggs, C., Calumet	**250**
Bowditch, C. P., & A., Bos.	**655**
Bacon, B. S., New York	**328**
Bigelow, W. S., Boston	**150**
Bollman, E., Opechee	**150**
Bartlett & L., Trs., Boston	**150**
Curtis, C. P., Boston	**1,300**
Clapp, C., Boston	**200**
Cotton, W. C., Boston	**525**
Curtis & A., Trs., Boston	**150**
Croul, J., Detroit	**200**
Clark, D., & Co., New York	**401**
Crafts, C. H., Boston	**206**
Coolidge, T. J., Manchester	**425**
Carter, J. A., Providence	**150**
Curtis, A. S., S. I., N. Y.	**200**
Cotting & A., Trs., Boston	**227**
Duncan, J., Calumet	**150**
Denoon, W., Montreal	**150**
Dalrymple & P., Trs., Bos.	**150**
Evans, W. J., G. Falls	**159**
Hendricks, Est., New York	**195**
Frothingham, E., Boston	**282**
Frue, M. B., San Jose, Cal.	**170**
Freeman & G., Trs., Bos.	**225**
Forbes, J. M., Milton	**1,825**
Forbes, S. S., Milton	**500**
Flagg, A. A., Boston	**150**
Gardner, G. A., Boston	**200**
Gay, J. E., New York	**250**
Gray, Horace, New York	**200**
Greene, A. B., France	**279**
Gardner, G. J. & B., Boston	**300**
Gray & Richard, New York	**250**
Gray & Hig., Boston	**275**
Gardner, J. L., Boston	**300**

CALUMET & HECLA SHAREHOLDERS—CONTINUED.

Gay, J. S., Boston	265
Goodwin & F., Trs., Bos.	260
Higginson, G., Lenox	225
Hodgson, Jon., Canada	364
Hodgson, A. A., Houghton.	180
Hunnewell, H. H., Boston.	894
Hunnewell, F. W., Boston.	310
Hussey, D., Louisville	175
Harry, W., Hancock	209
Hodge, E., Detroit	155
Higginson, J. J., Trs., N. Y.	4,000
Hodgson, J. P., Montreal.	200
Hammond, G. G., N. H.	196
Hunnewell, H. H., Natick.	150
Hunnewell, A., Boston	440
Higginson, L., Trs	310
Hunnewell, W. S., Natick.	360
Hunnewell, W., Boston	409
Harris, S. B., Hancock	160
Higginson, F. L., Boston	700
Jeffries, W. A., Boston	300
King, G. P., Boston	200
Lecompte, F. D., N. Y.	150
Lee, Higginson & Co., Bos.	1,258
Lee, H., & Cotting, Boston.	1,000
Lowell, A., Boston	400
Lyman, E. R., Brookline	950
McIntyre, J. C., Canada	200
Minot & Hig., Trs., Boston.	485
Minot & Ropes, Trs., Bos.	200
Morse, E. R., & Bro., Bos.	275
Morse & Lowell, Boston	150
Norman, G. H., Newport	400
Oliver, R. S., New York	3,500
Putnam, G., Boston	260
Paine, C. J., Boston	160
Parker, E. F., Nahant	172
Putham, W & H., Boston	400
Robinson, E. A., Boston	313
Rodman, S. E., Burlington.	242
Russell, M., Boston	175
Ryan, F., Hancock	200
Rich., Hill & Co., Boston	443
Riker, J. L., New York	150
Raht, C., New York	668
Shaw, P. G., Boston	305
Shaw, G. R., Boston	320
Shaw, S. P., Boston	305
Shaw, C. L., Boston	187
Sutton, A. H., Richmond, Ind.	230
Simpkins, J., Y'port	415
Simpkins, C. R., Y'port	325
Simpkins, N. S., Wash.	300
Scull, G., Boston	162
Shaw, Q. A., Boston	5,500
Sargent, J. W., Wellesley	360
Shaw, I. P., Wellesley	210
Sauer, M., Red Jacket	455
Shaw, S. R., Trs., Wellesley	305

CALUMET & HECLA SHAREHOLDERS—CONTINUED.

Shaw, G. & R., Trs., Wellesley	305
Stickney, C. D., New Bedford	150
Thorndike, C., Boston	200
Trs. C. & H. fnd., Calumet.	172
Thayer & Leverett, Trs., Boston	175
Thayer, R. S., Lancaster	300
U. S. Trust Co., N. Y.	400
Ward, S. G., New York	250
Wright, J. N., Detroit	900
Wright, J. N., Agt., Detroit.	3,850
Ware, E. C., Boston	212
Wheeler, G., Tr., Boston	300
Whiting, S. B., Cambridge.	300
Wells, S., Boston	155
Wentworth, A., Boston	300

Tamarack Mining Company Shareholders.

The following named persons are among the principal shareholders of the Tamarack Mining Company, recorded in 1899. There are between 1,100 and 1,200 stockholders in the Tamarack Mining Company, according to the last report made to the Michigan Secretary of State. We give in the annexed table a list of those holding 150 shares or over. Tamarack, it will be remembered, has only 60,000 shares:

Bangs, E. D., & Co., Boston.	234
Barbour, E. D., Boston...	200
Bigelow, A. S., Boston...	859
Bigelow, J. S., Trs., Boston.	445
Blackmar & B., Trs., Bos.	200
Bolles, M., & Co., Boston..	292
Brigham, E. E. S., Salem.	400
Brooks, J. Henry, Boston.	925
Brooks, E. F., St. J'sbury.	796
Bryant, John, Boston....	150
Burch, Est., I. N., Chicago.	159
Chamberlain, E. D., Wilton.	350
Clark, Eleanor J., Boston..	1,255
Clark, Ward & Co., Boston.	638
Cooper, J. B., S. L. Linden.	200
Crockett, Jerome, Detroit.	319
Day, R. L., & Co., Boston.	199
Denison, John N., Boston.	785
Dillaway & Starr, Boston.	1,532
Farwell A. L., St. J'sbury.	150
Fairbanks, M. E., " ..	1,288
Fidelity Dept. Co., Phila.	200
Freeman, A. F., Trs., Bos.	225
Gaden, Theo., N. Y. City.	491
Gay, Mrs. J. S., Boston..	300
Grew, Mrs. A. C., Boston.	1,173
Hager, Julius, Detroit....	300
Hager, John A., Detroit..	200
Hayden, Stone & Co., Bos.	604
Herrick, Mrs. M. F., S'field.	600
Herrick, J. T., Springfield.	200
Holes, Andrew, Morehead.	196
Hoppin, Mrs. M. F., Bos.	1,223
Hunnewell, H. H., Boston.	1,380
Hyams, G. M., Boston....	446
Jackson & Curtis, Boston.	262

TAMARACK MINING COMPANY SHAREHOLDERS—CONTINUED.

Kinnicutt & DeWitt, Wor.	365
Lee, Higginson & Co., Bos.	183
Lewisohn Bros, New York.	223
Lewisohn, Leonard, N. Y..	265
Lewisohn, Adolph, N. Y..	850
Lewisohn, Jesse, N. Y....	200
Miner, C. A., Cranby, P. Q.	150
E. Rollins Morse & Bro., Boston	810
Moseley, F. S. & Co., Bos.	390
McInnes, J., Boulder, Col.	207
Moulton, L. C., Boston...	150
Paine, Webber & Co., Bos.	171
Palmer, Thos. W., Detroit.	340
Parkinson & Burr, Boston.	698
Peck, L. R., Providence..	175
P. & Hunnewell, Boston..	181
Pruyn, A. Parker, Albany.	208
Rich., Hill & Co., Boston.	999
Riddlestorfer, S., N. Y..	370
Schenck, Est R. C., Wash.	180
Scull, Gideon, Boston....	240
Senter, John, Houghton..	230
Skinner, H. W., Detroit..	230
Sharp, Arthur B., Taunton.	170
Spencer, Mrs. J. V., Boston.	165
Stackpole & Gay, Boston.	384
Stanwood, A. G., Boston..	215
Strong, Sturgis & Co., N.Y.	400
Thatcher, John B., Albany.	166
Thayer & Thayer, Boston.	605
N. E. Trust Co., Boston...	225
Van Brunt, Agnes W., Bos.	193
Van Brunt, Chas., Boston.	600
Van Brunt & G. Trs., Bos.	3,518
Vivian, Johnson, H'ghton.	150
Wainwright, H. C., & Co., Boston	227
Weil, Harry S., New York.	211
Wheeler, L., Worcester...	327
Willard, Mrs. A. F., Boston.	225
Winslow, J. L., P'keepsie.	250
Woodhull, Maxwell, Wash.	600
Woods, Henry D., Boston.	200

Quincy Mining Company Shareholders.

According to official reports on file in 1899 with the State authorities in Michigan the following persons are the larger holders of Quincy stock. There are between 1,400 and 1,500 shareholders in the Quincy Mining Company. We append a list of those holding 150 shares or over, as per the last returns to the Michigan Secretary of State:

Adams, M. F., Boston	350
Allen, J. H., Elizabeth	154
Appleton, H.W., Dorchester.	185
Bagg, A. W., Springfield	250
Ballard, G. B., New York	240
Barker, C. A., Concord	420
Blackie, J., Boston	2,000
Bliss, Est. G., New York	5,500
Bliss, G. T., New York	500
Boardman, Est. L., E. Haddam	300
Boyd, S. H., Cincinnati	200
Brigham, A. C., Newton	278
Brown, J. E., Boston	3,286
Buffum, G. A., Tr., Prov.	320
Chesterton, A. B., Boston.	885
Clark, Sarah, Boston	200
Cotton, W. C., Boston	300
Cotting, A. & W., Trs., Bos.	200
Cushing, D. W., Hingham.	200
Danforth, S. A., Elmira	275
Daniells, A. J., Boston	325
Daniels, F. L., E. Haddam.	340
Daniels, H. B., Boston	3,337
Day, G. T., Westford	200
Devereux, C. S., Boston	4,251
Dodge, W. E., New York.	300
Drew, C. A., Boston	268
Dudley, H., New York	464
Emery & Tucker, Boston	200
Estabrook & Co., Boston.	296
Ethier, J., South Linden	200
Farlow, C. F., Boston	200
Foster, G. T., Everett	300
French, S. E., Ex., Randolph	200
Fry, P. J., Peabody	300
Garfield, E. A., Boston	250
Gilbert, S. D., Salem	150
Gilman, H. G., Springfield.	207

QUINCY MINING COMPANY SHAREHOLDERS—CONTINUED.

Grady, H. E., Boston	600
Harris, F. H., Springfield	240
Harris, L. B., Hancock	500
Head, C., & Co., Boston	175
Hendricks, Est. F., N. Y.	220
Hill, G. H., Cincinnati	300
Hodgson, D., Montreal	200
Hornblower & W., Boston	154
Howarth, A., Worcester	400
Howarth, F. A., Oxford	300
Hubbard, J. H., Cambridge	310
Humphrey, A. M., N. Y.	220
Lee, Higgin. & Co., Boston	255
Leighton, A. T., Br'kline	250
Littlefield, F., Boston	160
Mason, T. F., New York	316
Mason & Smith, N. Y.	9,882
Meserve, A. T., Boston	600
Milliken, C. J., Boston	250
Milliken, M. M., Boston	250
Milliken, A. N., Boston	350
Milliken, W. L., Boston	225
Monroe, I. H., Boston	5,227
Moseley, E. S., Newb'p't	200
Page, K., Boston	170
Paine, Webber & Co., Bos	802
Parker, S. E., Providence	280
Parker, E. F., Est., Boston	200
Parnall, W. E., Calumet	200
Patten, H. G., Boston	220
Peirce, J. E., Middleboro	314
Peirce, T. S., Middleboro	460
Peirce, T. S., Adm., Middleboro	440
Phelps, A. M., Boston	200
Reed, H. C., Taunton	200
Rice, Est. Ed., Boston	4,200
Rich, Hill & Co., Boston	744
Robinson, S. F., Brookline	260
Rudell, J. H., Manchester	250
Russell & L., Trs., Boston	200
Shackford, G. A., Boston	525
Shackford, R. E., Boston	636
Shattuck, G., Boston	211
Smith, K. H., New York	500
Smith, R. E. G., Montreal	400
Stellwag, G., Boston	320
Stevens, A. M., Tr., North Andover	200
Stevens, C. E., Ware	328
Stickney, C. D., New York	300
Stone, A., Boston	200
Sutton & Bowen, Boston	229
Taylor, R. F., Worcester	360
Wallace, M. C., N. Y.	1,340
Wells, J. W., Boston	1,300
Whitcomb, G. H., Worc'r	240
Whiting, H. A., Wilton	400
Whittlesey, A. P., Wash.	180
Williams, Est. W. H., Marq.	534
Wood, H., Roxbury	153

Osceola Consolidated Mining Company Shareholders.

Official records in 1899 gave the following names among the larger shareholders of Osceola stock. There are between 1,400 and 1,500 stockholders in the Osceola Mining Company. We give herewith a list of those holding 150 shares or over, as recently filed with the Michigan Secretary of State:

Aberdein, J. D., Boston....	201
Auger, Charles, Michigan.	200
Austrian, Mrs. M., Chicago.	250
Bain, H. A., New York...	183
Baker, Mrs. E. T., Boston.	1,002
Bangs, E. D. & Co., Boston.	330
Bassett, William, Boston..	246
Bath, William, Houghton.	400
Blackmar, W. W., Boston..	200
Bolles, M., & Co., Boston..	3,431
Bosch, Joseph L., Linden.	200
Brigham, Miss E. E. S....	600
Bright, Sears & Co., Bos.	255
Brooks, J. Henry, Boston.	1,456
Brown, Mrs. M. K., Mich.	150
Briggs, Charles, Calumet.	200
Burke, J. M., New York..	400
Burrill, C. L., Boston....	200
Cabot, Susan B., Boston..	575
Cassils, Charles, Montreal.	200
Chase, Chas. H., Nashua.	200
Chase & Barstow, Boston.	425
Clark, Eleanor J., Boston.	1,276
Clark, Ward & Co., Boston.	1,390
Clement, Parker & Co., Bos.	260
Croul, Jerome, Detroit....	200
Daly, P. J., Boston......	525
Day, R. L., & Co., Boston..	215
Denison, John N., Boston.	1,600
Denison, J.H., Williamston.	190
Dillaway & Starr, Boston.	908
Dooley, W. J., Boston....	150
Douglas, Mrs. M. M., Hoht'n.	285
Downer & Co., Boston....	900
Drape, E. L., Marquette..	150
Dunstan, James, Hancock.	200
Estabrook & Co., Boston.	363
Fairbanks, M.E., St.J'ns'b'y.	253
Fernald, G. A., & Co., Bos.	240
Fletcher, Geo. V., Boston.	150
Forbes, John M., Boston.	442
Gay, Fred. L., Brookline.	150
Gaden, Theo., New York..	820
Graves, John L., Boston..	300
Grew, Mrs. A. C., Boston..	764
Greenhout Bros., Escanaba.	305

OSCEOLA CONSOLIDATED MINING COMPANY

SHAREHOLDERS—CONTINUED.

Hayden, Stone & Co., Bos.	1,684
Head, Charles., & Co., Bos.	445
Hersey, Mrs. S. A., Rox..	200
Hodgson, David, Montreal.	250
Hoppin, Mrs. M. F., Bos.	1,190
Hornblower & Weeks, Bos.	572
Hunnewell, H. H., Boston.	462
Jackson & Curtis, Boston.	425
Kidder,Peabody & Co.,Bos.	565
King, G. H., Framingham.	300
Kinnicutt & DeWitt, Wor.	900
Ladd, Wm. J., Tr., Boston.	7,000
Lee, Higginson & Co., Bos.	457
Leland, Towle & Co., Bos.	945
E. E. Leland & Co., Bos.	290
Lord & Mandell, Boston.	370
MacLeod, A. G., Calumet.	200
Mette, August, Hancock..	170
Miner, A. B., Ispheming..	304
Morse, E. Rollins, & Co..	860
Nester, John L., Linden..	200
Orr, Arthur, Chicago.....	200
Paine, Chas. J., Boston..	263
Paine, Webber & Co., Bos..	2,012
Parkinson & Burr, Boston.	384
Patten, H. G., Boston....	250
Paul, Miss H., N. Centre.	160
Pearmain & Brooks, Bos.	351
Perkins, T. H., & Co., Bos.	290
[illegible]llins, James, Calumet.	700
D. L., Boston..	300
Pope, Merrill & Co., Boston.	710
Prendergast, J. M., Boston.	1,170
Putnam, W. F., & Co., Bos.	312
Richardson, Hill Co., Bos.	3,762
Rodman, S. W., Boston...	190
Seabury, F., & Bro., Bos.	252
Slater, H. N., Webster...	200
Smith, Clara D., Dorchester	401
Stackpole & Gay, Boston..	745
Stone, Albert, Boston.....	200
Sturges, Mrs. A. J., Ho'ghton.	159
Sutton & Bowen, Boston..	450
Stanwood, A. G., Boston..	300
Tapley, A. P., Boston....	400
Taylor, R. F., Worcester..	250
Thatcher, Geo. A., Albany.	750
Thatcher, J. B., Albany..	160
Thayer, Merr'm & T., Trs.	460
The N. E. Trust Co., Boston.	200
Tower, Giddings & Co.,Bos.	561
Tucker,Anthony & Co.,Bos.	190
Turner,Miss H.,Falmouth.	150
VanBrunt&Grew,Trs., Bos.	3,118
VanBrunt, Chas., Boston..	252
Wainright, H.C., & Co.,Bos.	1,330
Wait, J. W., Sandy Hill..	300
Werten, J. B., Red Jacket.	310
Wheelright, A. C., Boston.	170
Wile, Julius M., Rochester.	520
Wiley, H. C., Boston......	550
Wright, E. L., Hancock..	200

Wolverine Copper Mining Company Shareholders.

The official list of shareholders of the Wolverine Copper Mining Company in 1899 includes the following large shareholders. There are about 700 stockholders in the Wolverine Mining Company, which is capitalized for 60,000 shares. We give herewith a list of the holders of 150 shares or over, as last recorded with the Michigan Secretary of State:

Anderson, W. B., Calumet.	**350**
Anger, Chas., Michigan..	**205**
Austrian, Mrs. M., Chicago.	**200**
Austrian, Mary, Chicago..	**150**
Bosch, Joseph, L., Linden.	**1,100**
Bercry, Wm. A., E. Detroit.	**200**
Barrett, H. O., Boston...	**300**
Bollman, Ernst, Michigan.	**1,000**
Croul, Jerome, Detroit....	**300**
Curtis, T. W., Boston....	**200**
Clinton, J. E., Boston....	**390**
Cannon, M. J., Calumet..	**500**
Capen, G. F., Bloomfield..	**200**
Dunstan, E. D., Michigan.	**200**
Daniell, Mrs. S., Houghton.	**150**
Daniell, J., Est., Michigan.	**250**
Ethier, Isadore, Calumet.	**200**
Gay, J. E., Jeffrey, N. H..	**1,000**
Hayden, Stone & Co., Bos.	**2,803**
Hornblower & Weeks, Bos.	**825**
Head, Chas & Co., N. Y..	**190**
Holland, E. M., Detroit..	**200**
Hill, Thos., L. Linden....	**300**
Harris, S. B., Hancock..	**300**
Holman, J. H., Calumet..	**150**
Hodges, Chas. C., Detroit..	**855**
Harlow, T. H., Dorchester.	**150**
Kloeckner, M., Wisconsin.	**240**
Lee, Higginson & Co., Bos.	**177**
Leland, T., & Co., Boston..	**155**
Light, W. J., Calumet...	**500**
Lanburgh, A.H.J., Calumet.	**200**
Lyman, Robt., Escanaba.	**230**
Lord & Mandell, Calumet.	**500**
Mason & Smith, New York.	**1,000**
Maatte, Jacob, Calumet...	**200**
McKennon, A., Michigan..	**200**
MacKenzie F., Calumet...	**150**

WOLVERINE COPPER MINING COMPANY

SHAREHOLDERS—CONTINUED.

Martin, J., So. Yarmouth	200
McLeod, Alex G., Calumet	500
Mette, August, Hancock	200
Montgomery, J.B., Michigan	200
Miner, Anson B., Michigan	380
Maslin, Thos., Calumet	200
Messner, Mich'l, Michigan	200
Perkins, Thos. H., Boston	1,005
Paine, Webber & Co., Bos.	4,431
Printen, Joseph, Hancock	560
Quello, B., Calumet	250
Reeder, J. F., Calumet	500
Roberts, Wm. H., Hancock	200
Rice, John H., Houghton	200
Riley, Wm. P., Michigan	310
Rollins, F. E., Opechee	150
Stanton, John, New York	1,070
Smith, S. L., Detroit	500
Stearns, W. B., Boston	296
Stackpole & Gay, Boston	390
Sturgis, I., Boston	150
Stone, E., New York	300
Schneider, J., Hancock	600
Sutton, D., Richmond, Ind.	350
Sturgis, Mrs. A. J., Boston	170
Seager, J. H., Hancock	175
Scull, E. B., Pittsburg	150
Stringer, Joseph, Detroit	200
Slack, J. A., Michigan	200
Trowbridge, A.H., Hancock	200
Tower, Wm. C., Michigan	300
Turner, A. B. & Bro., Bos.	343
Thatcher, Geo. H., Albany	200
Taylor, Mrs. L.J., Houghton	200
Vivian, J., Houghton	1,000
Vivian, Wm. R., Michigan	150
Wiley, H. C., Boston	3,760
Whittle, Thos., Hancock	300
Wyman, H. A., Boston	175
Wright, E. L., Hancock	200
Wright, Z. W., Houghton	200
Williams, R. J., Ishpeming	200
Ziegler, W., Calumet	300

Market Prices of Copper Mining Shares.

The following quotations show the highest and lowest market prices of the copper mining shares in Boston during the following months, in 1899, viz.:

Name of Company.	July, 1899. Highest.	July, 1899. Lowest.	August, 1899. Highest.	August, 1899. Lowest.	September, 1899. Highest.	September, 1899. Lowest.
Adventure	$10.00	$9.00	$10.00	$9.00	$9.00	$7.00
Allouez	9.00	7.75	7.75	6.25	6.75	5.00
Anaconda	57.50	54.50	58.50	55.50	55.37½	51.87½
Arcadian	71.50	56.00	79.87½	70.00	72.00	47.25
Arnold	15.87½	13.50	15.62½	14.00	14.50	10.00
Atlantic	32.00	30.00	30.00	27.00	31.75	27.00
Baltic	35.00	31.00	31.75	25.25	†27.00	21.50
Bingham	13.50	11.50	18.50	13.00	17.00	14.00
Boston & Montana	374.00	348.00	*363.00	*350.00	358.00	335.00
Butte & Boston	83.00	76.00	79.75	72.00	75.00	60.00
Calumet & Hecla	825.00	780.00	845.00	825.00	840.00	770 00
Centennial	36 75	33.00	37.12½	33.00	37.37½	32.00
Copper Range	45.00	43.00	44.00	41.00	42.50	35.00
Franklin	21.50	18.00	21.25	19.50	20.50	17.50
Isle Royale Con	48.00	44.00	54.50	46.50	49.75	41.00
Mass. Con	15.75	12.00	13.00	12.00	13.00	9.00
Michigan	14.00	13.25	14.00	12.50	12.50	10 00
Mohawk	27.00	26.00	26.75	20 00	25.50	21.00
Old Colony	11.75	9.00	10.50	9.00	10.00	7.50
Osceola Con	91.00	86.75	92.00	88.00	88.25	82 00
Old Dominion	39.00	37.00	38.25	35.00	35.50	30.00
Parrot	55.37½	52.00	55.00	50.00	51.75	42 50
Santa Fe	14.87½	12.50	16.75	13.12½	15.50	12.00
Quincy	170.00	159.00	*163.00	*155.00	160.00	152.00
Rhode Island	8.50	7.25	8.00	7.00	7.50	6.00
Tamarack	227.00	215.00	230.00	220.00	228.00	205.00
Tecumseh	7.00	5.00	6.00	5.00	6.00	5.00
Tri-Mountain	11.50	10.00	11 50	9.75	11.75	8.75
United States	23.87½	21.00	41.25	23.00	42.87½	30.75
Utah Con	45.00	42.25	45.00	43.00	43.75	35.00
Union Cop. L. & M.	8.50	8.00	8.00	7.50	7.12½	5.50
Victoria	6.00	4.00	7.50	4.50	6.50	4.75
Washington	2.25	1.50	2.12½	1.75	2.62½	1.87½
Winona	14.00	12.75	12.75	11.25	11.50	8.00
Wolverine	47.50	45.00	48.00	46.00	47.00	*40.50
Wyandotte	7.00	5.50	6.87½	5.00	5.00	4.00

*Ex Dividend. †$3 assessment paid.

Market Prices of Copper Mining Shares.

The following quotations show the highest and lowest market prices of the copper mining shares in Boston during the following months in 1899, viz.:

Name of Company.	October, 1899.		November, 1899.	
	Highest.	Lowest.	Highest.	Lowest.
Adventure	$7.12½	$5.25	$7.00	$5.75
Allouez	6 00	4.12½	4.25	3.50
Anaconda	50.12½	41.25	48.12½	43.50
Arcadian	53.00	35.00	39.50	28.00
Arnold	11.62½	8 00	9.00	7.75
Atlantic	30.00	25.00	28.00	25.00
Baltic	25.37½	22.00	27 00	23.00
Bingham	17.25	13.75	16.00	14.50
Boston & Montana	365.00	*321.00	326.00	280.00
Calumet & Hecla	800.00	740.00	777.50	745.00
Centennial	34.75	22.50	26.25	21.50
Copper Range	37.00	34.00	42.00	35.00
Franklin	18.00	15.00	19.00	16.87½
Isle Royale Con	46.00	35.00	38.00	32.00
Mass Con	11.50	9.00	11.00	9.00
Michigan	11.00	9.00	10.00	8.50
Mohawk	21.50	17.25	22.00	17.50
Old Colony	9.75	6.50	7.00	5.75
Osceola Con	87.50	79.75	86.00	*80.50
Old Dominion	34.25	26.00	32.00	28 75
Parrot	49.25	40.00	46.50	42.00
Santa Fe	12.87½	7.00	9.25	7.50
Quincy	160.00	150.00	156.00	150.25
Rhode Island	7.25	5.00	6.00	4.75
Tamarack	228.00	210.00	225.00	210.00
Tecumseh	5.50	4.00	5.50	4 00
Trimountain	9.75	7.00	10.00	8.75
United States	32.75	28.75	33.37½	29.87½
Utah Con	41.25	32.00	39.25	35.00
Victoria	5.25	4.00	5.00	4.50
Washington	2.37½	1.50	2.12½	1.62½
Winona	10.00	6.00	9.00	6.75
Wolverine	42.50	39.00	45.00	40 75
Wyandotte	4.50	2.00	3.00	2.50

*Ex. Dividend.

Market Prices of Copper Mining Shares.

The following quotations show the highest and lowest market prices of the copper mining shares in Boston, during the following months in 1899, viz.:—

Name of Company.	Jan., 1899. Highest.	Jan., 1899. Lowest.	Feb., 1899. Highest.	Feb., 1899. Lowest.	Mar., 1899. Highest.	Mar., 1899. Lowest.	April, 1899. Highest.	April, 1899. Lowest.	May, 1899. Highest.	May, 1899. Lowest.	June, 1899. Highest.	June, 1899. Lowest.
Adventure	$ 10.00	$ 8 75	$18.12½	$ 9.37½	$16 00	$13.00	$15.00	$13.00	$14.00	$10.00	$11.00	$ 9.00
Allouez	11.75	6.25	13.50	9.75	12 50	7.87½	12 00	9.25	12.62½	9.00	9 50	8.00
Anaconda	46.25	32.50	46 25	41.25	47.25	48 50	70.00	55.00	67.62½	54.12½	56.00	49 62½
Arcadian	78 00	60.00	88.50	68.00	95.25	59 00	72.00	65.00	69.00	50.00	56.00	48.00
Arnold	7.50	†14.00	14 00	8.00	12.00	9 25	10 50	9 25	14.87½	8.00	17.25	10 50
Atlantic	45 00	31.12½	44 50	33.00	39.00	30 00	41.00	33 00	36.00	30 00	34.00	28.00
Baltic	35.50	30.25	36.00	27.00	31.25	25.50	36.75	30.00	32.00	27.00	36.50	27.00
Bingham	12 00	8.50	17.62½	10.00	14.00	10.00	16 25	14.00	15 00	10.25	12.50	11 00
Boston & Montana	357.00	260.00	377.00	343.00	380 00	358.50	400 00	350 00	388.00	*340 00	350 00	290 00
Butte & Boston	94.00	74.00	97.00	84.00	95.50	78.00	108 00	84 50	104.00	80 00	77.62½	65.00
Calumet & Hecla	765.00	635.00	895.00	750.00	*775.00	*705.00	859.00	775.00	850.00	*790.00	805.00	770.00
Centennial	42.50	30.25	53.50	34.50	61.00	39.50	49 50	41.00	43.00	34.00	37.00	30 00
Copper Range	‡20.00	......	56.00	37.50	50.00	40 00	51.00	47.00	49.00	40.00	47.50	40 00
Franklin	30.00	20.50	30.00	23.00	27.00	21 00	28 00	26 00	27 50	19 50	20 00	17.37½
Isle Royale Con	58.50	38 00	67.00	50.50	73.50	61 00	75 00	65 00	70.00	48.00	47.50	40 00
Mass Con	15 00	12.75	17.50	14 00	16.00	9.50	17.00	13.50	15.75	12 50	12.50	10.50
Mohawk	26 50	21 25	37.00	26.00	32.50	24.00	38.25	31 25	35 50	28 00	28.00	25.00
Old Colony	19.25	15.00	21.50	16.50	20 00	14.00	18.00	16.00	15.00	12.00	12.00	9.87½
Osceola Con.	104.00	77.75	105.00	93.00	94 50	86.00	99.25	89 00	94.50	*83.00	86.50	77.00
Old Dominion	40.00	35.00	49.00	36.00	47 50	36 25	53 50	42 00	50.00	39 00	40 75	34.50
Parrot	40 00	36.00	60.50	39.00	49.00	39 00	72.50	50.00	68 50	56 00	*59.50	*48.00
Santa Fe	New Co.		22.00	17.00	19.00	14.00	18.25	15.87½	16 50	12.00	12.62½	11.25
Quincy	190.00	145.00	186.00	155.00	175.00	155 00	175.00	165.00	168.00	155 00	165 00	150 00
Rhode Island	9 75	7 50	16.00	9 12½	15 00	12.00	15 00	12.00	13 00	9.50	9.50	5 50
Tamarack	260.00	185 00	265.00	230.00	250 00	220.00	248.00	220.00	235.00	216.00	218 00	187.50
Tecumseh	7.50	5.75	10 25	7.00	9.75	7 25	8 50	7 00	7.00	5.50	6.25	5 00
Tri-Mountain	16 00	‡12.00	17.75	12 00	14 25	11 00	14.50	13.25	13.50	9.50	11.87½	9.50
United States	New Co.		.	....	22.00	‡20.00	26 50	20.00	25 50	19 87½	24 00	21.00
Utah Con	30 00	23.50	50.00	27.75	47 75	36.00	52.87½	40.00	48.75	39.00	43.50	34.50
Union Cop. L. & M.	18.50	*8.00	11.50	8.00	9 00	6.75	11.00	7.25	10.00	7 50	8.50	6.50
Washington	2.62½	1.00	4 25	2.00	3.00	2.25	2.75	2.50	2.50	2.00	2 75	2.00
Winona	16.00	12.00	22.00	15 50	20.50	16.00	19.00	16.00	17.00	14.00	14 75	13.50
Wolverine	50.00	36.00	50.00	44.00	49.00	41.00	*49.25	*44.75	47.00	43.75	46.00	42.00

Market Prices of Copper Mining Shares.

The following quotations show the highest and lowest market prices of the copper mining shares in Boston, at which sales were made during the periods named, viz.:

Nameof Company.	1898. Jan. 3 to April 1. Highest.	Lowest.	1898. April 1 to July 1. Highest.	Lowest.	1898. July 1 to Oct. 1. Highest.	Lowest.	1898 Oct 1 to Dec. 31. Highest.	Lowest.
Adventure	.....	.....	.....	.....	Sub. Pr.	$5.00	$10.00	$8.50
Allouez	$2.75	$0.75	†$5.62½	$1.75	$5.00	3.00	8.00	4.93¾
Arcadian	Sub. Pr.	12.00	26.00	23.00	24.00	20.00	75.00	28.25
Arnold	†12.00	2.50	17.00	10.25	19.00	14.25	18.50	8.00
Ash Bed	3.75	2.12½	4.25	2.25	3.75	2.00	3.00	1.50
Atlantic	*34.00	*25.50	32.00	24.00	29.75	25.00	35.50	25.00
Baltic	14.25	11.00	24.50	11.50	20.00	15.37½	36.50	16.00
Boston & Montana	191.00	149.25	212.00	167.00	231.00	203 00	288.00	222.00
Butte & Boston	28.62½	18.50	26.50	20.37½	26.62½	21.25	94.50	23.00
Calumet & Hecla	540.00	489.00	575.00	515.00	600.00	550.00	650.00	580.00
Centennial	†14.75	8.00	†17 00	11.25	21.00	13.62½	40.00	17.00
Central	...	.....	3.00	1.00	1.50	.....	3.00	.....
Franklin	17.00	10.37½	15.00	10.00	15.00	11.50	24.00	13.00
Humboldt	2.37½	.80	6.25	1.50	6.25	4.50	5.87½	3.00
Isle Royale Con	Sub. Pr.	20.00	27.50	18.50	27.00	24.00	50.00	23.00
Mass Con	.....	.....	Sub. Pr.	8.00	.....	.....	13.50	10.00
Meadow	.....	.....	.....	.....	....	.....	2.25	2.00
Mohawk	.....	.....	. .	....	Sub. Pr.	7.50	21.75	12.00
National	.60	.60	1.00	.60	†5.35	.....	.....	.....
Osceola Con	44.87½	36.00	55.25	38.50	59.25	45.00	87.00	56.00
Old Colony	.....	....	Sub. Pr.	10.00	.....	.....	15.25	12.00
Old Dominion	32.00	21.50	28.87½	22.00	29.87½	22.12½	40.00	26.50
Parrot	25.75	18.50	24.00	18.50	23.75	22.50	40.00	23.50
Quincy	118.50	*105.00	118.12½	106.00	120.00	110.50	150.00	118.00
Rhode Island	.....	.....	.....	Sub. Pr.	5.00	.....	7.50	6.50
Tamarack	160.00	135.25	169.00	142.00	179.00	153.00	190.00	171.00
Tecumseh	3.87½	2.25	3.50	1.75	4.00	2.00	6.12½	2.50
Union Cop. L. & M.	.....	.....	.....	Sub. Pr.	5.00	.....	12.50	7.25
Washington	.20	.....	.20	.....	2.25	.75	1.50	1.00
Winona	.....	.....	.....	Sub. Pr.	8.00	.....	15.50	14.00
Wolverine	23.00	17.50	23.00	18.62½	28.00	21.50	38.25	26.00

†Assessment paid. *Ex. dividend.

Assessments called in 1898:—Allouez, $1, June 8; Arnold, $3, Jan. 27; $3, Jan. 25, 1899; Centennial, $3, March 5; Baltic, $1, Oct. 27; National, $5, Aug. 15; Washington, 20c. March.

MARKET PRICES OF COPPER MINING SHARES—CONTINUED.

Name of Company.	1897. Jan 2 to April 1. Highest.	Lowest.	1897. April 1 to July 1. Highest.	Lowest.	1897. July 1 to Oct. 1. Highest.	Lowest.	1897 Oct. 1 to Dec. 31. Highest.	Lowest.
Anaconda	$33 00	$29 00	......	......	Inactive.		......	......
Allouez	1.00	.75	$0.50	$0.50	$1.50	$0.50	$1 25	$0.60
Arnold	†3.75	1 50	3.87½	2.12½	5.12½	2.00	4.00	1.50
Atlantic	26.00	21.00	22.00	18.62½	27 75	20.00	27.00	21.50
Baltic	Subscription price, $1.75.		Subscription price, $1.75.				12.75	†2.75
Boston & Montana	129 00	94 75	134.75	*118.50	152 00	*128 50	150 00	130 25
Butte & Boston	†20.00	5.87½	†22.75	14.75	29.37½	21.62½	29.50	18.00
Calumet & Hecla	390.00	326.00	*395 00	350.00	*495.00	385.00	*490.00	450.00
Centennial	†9 25	2.50	†8.00	†4.50	24 25	6.50	21.00	9.00
Central	......	......	......	......	....	......	......	......
Copper Falls	5.00	5.00	......	......	4.50	3.50	......	.....
Franklin	14.00	10.50	16.50	10.00	26 00	13.00	22 50	16.00
Humboldt	.60	.17	.....	......	.50	.....	†.90	.15
Kearsarge	21.00	15 75	19.00	14.00	23.75	17.50	21.50	16.50
National	.30	......	......	......	......	......	......	......
*a*Osceola	*35.25	29.25	33.75	28.00	42 12½	32.00	41.00	31.87½
Old Dominion	19.25	12.00	19.50	12.00	29 00	18.00	26 50	19.00
Quincy	129.00	*104.00	116.00	107.00	121.00	113.00	118 00	109.00
Quincy Scrip	96.50	96.00	Became Quincy stock April 16, 1897.					
Tamarack	125 00	92.00	*128.00	110.00	146.00	125 00	140.00	125.00
Tamarack Junior	19.25	15.00	22 50	14.00	21.75	16.50	16.87½	14.00
Tecumseh	3.25	2.75	2.00	.50	†5 75	.75	4 75	1.75
Wolverine	10.87½	9 00	10.75	8.50	18.75	10.87½	18.25	14.25

†Assessment paid. *Ex. Dividend.

Assessments in 1897 were payable on the following: *Baltic*, $1, Dec 6. *Butte & Boston*, $10, payable in four installments of $2 50 each, on Jan. 15, Feb. 15, Mar. 15, April 15. *Centennial*, 50c., Feb. 1; $1. April 9. *Humboldt*, 50c, Oct 18. *Tecumseh*, $1, July 1. *Ridge*, $1, Feb. 16.

*a*Kearsarge, Tamarack Junior, and Iroquois consolidated with the Osceola Oct. 26, 1897, when the Osceola increased its capital stock from 50,000 to 100,000 shares.

MARKET PRICES OF COPPER MINING SHARES—CONTINUED.

Name of Company.	1896. Jan. 2 to April 1.		1896. April 1 to July 1.		1896. July 1 to Oct. 1.		1896. Oct. 1 to Dec. 31.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
Anaconda	Quoted nominal at $33.00.							
Allouez	$1.00	$......	$1 00	$0 25	$0 50	$0.50	$1 00	$0.50
Arnold	1.75	1.00	1.25	.75	1 37½	.99	1.25	.25
Atlantic	20.00	15.00	20 25	17.00	19.00	15.00	23 50	17.00
Boston & Montana	81.00	65.00	91 50	*72.50	91.25	66 75	*96.50	78.50
Butte & Boston	13.25	1.25	3.25	1 87½	3.50	1.50	7 50	1.93¾
Calumet & Hecla	*310 00	295.00	311.00	*300 00	*315.00	299.00	335.00	310.00
Centennial	......	......	.50	.10	†2.50	†1.50	3 12½	2.00
Central	......	......	......	......	......	......	......	......
Copper Falls	......	......	......	......	......	......	......	..
Franklin	15.00	11 00	13.50	8.50	11 00	8.00	12.50	9 00
Humboldt	......	......	......	......	......	......	......	......
Kearsarge	13.50	10.37½	14 50	8.75	14.00	9.00	17.75	9.75
National	..	......	.75	......	....		......	......
Osceola	29.00	22.00	31.25	24.25	28.00	20.50	31.50	25 00
Old Dominion	19.50	15 00	23.25	13.12½	17.75	10 25	19 87½	14.25
Quincy	134.00	*118.00	125.00	110.00	115.00	*104.00	130.00	110.00
Quincy Scrip	81 25	63 00	85.00	77.50	82.00	75.00	100 00	80.00
Tamarack	120.00	86.00	104.00	*80.00	90.00	65.00	102.00	81.00
Tamarack Scrip	90.00	80 00	Became Tamarack stock April 1					
Tamarack Junior	17.50	13.00	15.00	9.00	13.50	8.00	15.50	11.75
Tecumseh	4 50	2 00	3.25	1.75	4.00	2.00	4.00	3 00
Wolverine	8.00	5 87½	8.00	6.50	7 50	6.00	9.37½	6.75

* Ex. Dividend. † Assessment paid, $2 in June.

Arnold called assessment of $1 Dec. 7. 1896. Tamarack increased from 50,000 to 60,000 shares April 1, 1896.

MARKET PRICES OF COPPER MINING SHARES—CONTINUED.

Name of Company.	1895. Jan. 2 to April 1. Highest.	Lowest.	1895. April 1 to July 1. Highest.	Lowest.	1895. July 1 to Oct. 1. Highest.	Lowest.	1895. Oct. 1 to Dec. 31. Highest.	Lowest.
Anaconda	$.....	$.....	$.....	$.....	$ ..	$....	$35.00	$.....
Allouez	.35	.25	1.25	.50	2.50	.75	1.00	.30
Arnold	......	.....	3.50	1.00	6.00	1.75	2.87½	1.00
Atlantic	11 00	10 00	16.25	9.75	34.00	17.00	22.50	13.00
Boston & Montana	39 25	33.37½	60.50	37.50	99 50	61.00	88.50	*56.50
Butte & Boston	11.37½	9.00	17.00	9 75	28 50	15.37½	19.62½	8.50
Calumet & Hecla	295 00	280 00	*305.00	*280.00	330.00	293.00	*320.00	*290 00
Centennial	.99	.50	2.06¼	.50	2 37½	.15	1.25	.15
Central	2.50	......	......	......	15.00	......	......	......
Copper Falls	......	......	7.00	.....	11.75	6.50	......	......
Franklin	14.75	10.62½	17.62½	11.00	25 00	15.50	19.75	9.00
Humboldt	......	....	.35	.25	.90	.35	......	......
Kearsarge	9.50	7.00	15.50	8.25	26.00	14.37½	21.50	*7.00
National	......	......	2.50	.75	1.87½	1.00	......	......
Osceola	25.00	20.00	30.00	20.50	41.50	28 00	33.25	*20.00
Old Dominion	......	.....	......	......	......	New.	18.50	13.00
Quincy	107.00	*98.00	125.00	101.75	*170.00	116.00	144.00	110.00
Quincy Scrip	45.00	39 75	*a*70.00	*a*48.75	90.00	64.00	79.75	65 00
Tamarack	158.00	134.87½	149.00	125.00	175.00	*135.00	150.00	*115 00
Tamarack Scrip	*b* First sale 48.		July, $25 paid.		75.00	48.00	85.00	60.00
Tamarack Junior	12.25	10.50	20.12½	11.50	30.00	19.00	22.50	11.00
Tecumseh	......	......	......	......	4.75	3.00	4.00	2 00
Wolverine	4.62½	2.68¾	8.00	4.00	10.25	6 25	7.75	5.00

* Ex. Dividend.

a Quincy Scrip, $12.50 paid in; $6.25 payable April 16, 1896, and $6.25 payable April 16, 1897.

b Tamarack Scrip, $25 paid July 1, 1895; $25 paid Oct. 1, 1895; $25 payable Jan. 1 1896; $25 payable April 1, 1896.

Copper Share Fluctuations.

The following table gives the highest and lowest prices of copper shares in Boston during the years mentioned, viz.:

Name of Company.	Year 1893. Highest.	Year 1893. Lowest.	Year 1892. Highest.	Year 1892. Lowest.	Year 1891. Highest.	Year 1891. Lowest.	Year 1890. Highest.	Year 1890. Lowest.
Anaconda	$......	$	$......	$......	$......	$......	$......	$......
Allouez	.90	.25	1.75	.75	4.25	1.50	10.25	1.25
Arnold	1.00	.20	†1.75	65	†2.87½	.30	2.50	10
Atlantic	12 37½	7.00	13.87½	9 00	18.00	10.00	23.00	*12 50
Boston & Montana	37.25	15 00	46.12½	30.00	50.00	36.25	68.00	38.50
Butte & Boston	11.75	5.00	17.50	7.00	20.00	13.00	26.62½	11.00
Calumet & Hecla	320.00	247.00	*300.00	258.00	280.00	240.00	*323.00	240.00
Centennial	9.75	1.75	13.62½	5 00	22.00	8.00	47.50	12.00
Central	15 00	12.50	16.00	8.00	18.00	*15.00	35.00	8 00
Copper Falls	7.37½	7.00	8.00	7.37½	8.00	8.00	11.50	5.00
Franklin	*13.50	8.50	*16.25	*11.00	19.00	14 00	28.00	13.00
Humboldt	.26	.14	.30	.12	.55	.17½	.75	.10
Kearsarge	12.75	4.75	15.62½	10.00	17.00	10.00	34.50	7.75
National	1.25	.75	2.00	.75	4.00	1.00	5.00	1 25
Osceola	37.50	20.00	*37.75	23.62½	41.00	26.00	48.25	23.00
Old Dominion	.....	.	.....	.....	.....	.....	.....	.....
Quincy	144.00	80 00	145.50	103.00	115.00	*85.00	132.50	68.00
Ridge	30	.25	1.00	.50	87½	.50	2.00	.62½
Tamarack	*166.00	112.00	*175.00	*146.00	179.00	140.00	227.00	125.00
Tamarack Junior	24.00	11.00	46.50	16.00	58.00	50 00	55.00	25.00
Tecumseh	.50	.50	1.00	.75	3.62½	2.50	9.00	1.50
Wolverine	3.00	.75	4.00	1.25	7.00	4.00	....	....

†Ex Dividend. *Assessment paid.

COPPER SHARE FLUCTUATIONS—CONTINUED.

Name of Company.	Year 1898. Highest.	Year 1898. Lowest.	Year 1897. Highest.	Year 1897. Lowest.	Year 1896. Highest.	Year 1896. Lowest.	Year 1895. Highest	Year 1895. Lowest.	Year 1894. Highest.	Year 1894. Lowest.
Anaconda	......	......	$33.00	$29 00	$33.00	$33.00	$35.00	$35.00	......	......
Allouez	$8.00	$0.75	1.50	.50	1.00	.25	2.25	.25	$0.50	$0.09
Arnold	19.00	2.50	5.12½	1.50	1.75	.25	6.00	.75	1.00	.75
Atlantic	35.50	24.00	27.75	18.62½	23.50	15.00	34.00	9.75	12.00	7.50
Boston & Montana	288.00	149.25	152.00	94.75	96.50	65.00	99.50	33.37½	33.75	22.00
Butte & Boston	94.50	18.50	29.50	5.87½	7.50	1.25	28.50	8.50	11.75	7.87½
Calumet & Hecla	650.00	489.00	495.00	326 00	335.00	295.00	330.00	280.00	302.00	*269.50
Centennial	40.00	8.00	24 25	2.50	3.12½	.10	2.37½	.15	5.00	.50
Central	......	......	7.50	......	10.00	5.00	15.00	2.50	15.00	5.00
Copper Falls	......	......	7.00	3.50	7.00	6.00	11.75	6.50	......	.. ..
Franklin	24.00	10.00	26 00	10.00	15 00	8.00	25.00	9.00	15.50	7.50
Humboldt	6.25	.80	.90	.15	.45	.20	.90	.25	......	......
Kearsarge	......	......	23.75	14 00	17.75	8.75	26.00	*7.00	8.00	4.75
National	.....	... ..	.50	.30	.75	.50	2.50	.75	1.00	.75
Osceola	87.00	36.00	42.12½	28.00	31.50	20.50	41.50	*20.00	28.00	18.00
Old Dominion	40.00	21.50	29.00	12.00	28 25	10.25	18.50	13.00	......	......
Quincy	150.00	105.00	129.00	104.00	134.00	104.00	*170.00	*98.00	131.00	80.00
Quincy Scrip	.. ..	......	100.00	96.00	100.00	63.00	90.00	39.25	42.50	20.75
Ridge	......	......	......	......	.75	.50	1.00	.75	87.50	.25
Tamarack	190.00	135.25	146.00	92.00	120.00	65.00	175.00	*115.00	170.00	146.00
Tamarack Scrip	......	......	......	......	90.00	80.00	85.00	48.00	......	......
Tamarack Junior	......	......	22.50	14.00	17 50	8.00	30.00	10.50	20.00	10.00
Tecumseh	6.12½	1⅜	†5.75	.50	4.50	1.75	4.75	1.00	......	......
Wolverine	38 25	17.50	18.75	8.50	9.87½	5.87½	10.25	2.68¾	3.25	1.25

* Ex. Dividend. † Assessment Paid.

Electricity.

While the study of electricity has had its development only within the last century, there is little or no doubt that its existence was known to ancient civilization of 2,000 years ago. Whether the ancient mysteries of the Egyptians and the magic arts of Wise Men of the East were due to their knowledge of electric phenomena or not must remain conjectural, but certain it is that our modern scientists would have been deemed by our progenitors wizards and sorcerers in league with the Evil One. The wider range of ideas which a more intimate knowledge of physical science has effected enables the seeming magical effects of the telegraph, telephone and phonograph to be accepted without hesitation, although a century or so ago such realities were not dreamed of. The moulding influence of scientific truth, however, is such that, as higher conceptions and greater discoveries of the material universe are attained, our mental development responds to and accepts the most complex of natural phenomena as simple and obvious facts. It may well be considered, therefore, that electricity was the magic of the ancients.

Electricity may be said to be the question of the physical world at the present time, and its determination will continue long to absorb the interest of scientists everywhere. It is generally conceded that electricity is immaterial in its nature, but is an inherent property of matter, through the medium of which, as with heat, gravitation, or chemical affinity, matter attains energy and exhibits force. If electricity were matter, we should expect it to exert gravitation like other known forms of matter, but no one has ever been able to detect any increase in the weight of a condenser after charging it. On the other hand, every evidence of the presence of electricity, since its first recorded discovery by Thales of Miletus in the seventh and sixth centuries before the Christian era, in the attractive power of rubber-amber, has been and is through some manifestation of force, while it is always found that the production of a certain quantity of electric power requires the expenditure of a corresponding quantity of energy in some other form.

First Suspension Bridge.

It is a matter of historical record that the first suspension bridge that can be known with that appellation was thrown across the Im-jin River, in Korea, in the year 1592. Stress of circumstances and dire necessity suggested and evolved the ways and means of accomplishing the feat. The Japanese, in P'yeng-yang, learning of the defeat of the army of reinforcement, decided to withdraw. China had begun to exert herself on behalf of Korea, and the Japanese, driven from P'yeng-yang by the combined Chinese and Korean armies, hastened southward to Seoul. When the pursuing forces arrived at the Im-jin River the Chinese general refused to cross and continue the pursuit unless the Koreans would build a bridge sufficiently large and strong to insure the passage of his 120,000 men in safety. The Koreans were thirsting for revenge upon the Japanese, and would not be hindered by any obstacle that human ingenuity could surmount. Sending parties of men in every direction, they collected enormous quantities of chilk, a tough, fibrous vine that very often attains a length of 100 yards. From this chilk eight huge hawsers were woven. Attaching them to trees or heavy timbers sunk into the ground, the bridge builders carried the other ends of the hawsers across the river by boats, and anchored them there in the same manner. Of course the hawsers dragged in the water in midstream, but the Koreans were equal to the occasion. Strong oaken bars were inserted between the strands in midstream, and then the hawsers were twisted until the tension brought them fully 10 feet above the surface of the water.

Brushwood was then piled on the eight parallel hawsers and upon the brushwood clay and gravel were spread and laid. When this roadbed had been packed down firmly and the bridge duly tested the Chinese could no longer refuse to advance, and so upon this first suspension bridge, 150 yards in length, that army of 120,000 Chinamen, with their Korean allies, crossed in safety. The bridge, thus serving its purpose, was left to fall eventually of its own weight.

Odds and Ends.

The oldest iron steamship in the world is said to be the United States steamer "Michigan," on Lake Erie. The vessel was built at Pittsburgh, Pa., in 1841-43; the parts were transferred to Erie, put together and launched on December 5, 1843. The original machinery, with the exception of the boilers, is still in her, and in good condition. The vessel is an iron paddle-wheel steamer, of 685 tons displacement; length of keel, 156 feet 4 inches; length between perpendiculars, 162 feet 6 inches; breadth of beam, 27 feet; depth of hold, 12 feet 5½ inches.

This vessel has been in continuous service to the present, about fifty-six years, and is apparently as good for service as ever. During all these years of service no signs of weakness were exhibited.

Her armament at present consists of six 6-pounders, two 10-pounder rapid-fire guns and two machine guns. Of late years her principal occupation has been in the instruction of the United States Naval Militia at the different Lake ports, and surveying.

The first locomotive ever operated in this country was the "John Bull." The engine was sent from England in 1830 and given its first trial near Bordentown, N. J. The oldest locomotive engineer in the United States, Joseph Wood, who died at his home at Red Bank, N. J., on October 17 last, aged eighty-nine, was fireman on the "John Bull."

THE GROUND IS ALIVE.

We are so used to thinking of the soil as mere mineral matter that it comes quite as a shock to find this is a mistake.

As a matter of fact, the layer of soft mold which clothes the ground in all cultivable districts and from which vegetation springs is actually in great part a living layer of tiny plants and animals.

Interlacing threads of molds and fungi, worms and grubs, creeping insects, tiny root parasites, decaying leaves and the millions of bacteria which spring from them—all these are mixed and mingled together for many inches down below our feet in a confused mass of life. Germs of all sorts swarm in countless millions.

Indeed, all the plants that grow and life that exists on the face of the earth owe their being to the fact that the ground is alive. You take a shovelful of the finest soil in the world and sterilize it—that is, beat it till all the life in it is destroyed—and then plant seeds in it. No amount of care or watering will make those seeds grow. Their life depends on the life in the soil around them.

Production of Copper, including Precious Metals, in Michigan.

Estimated Government Returns.

	Year 1895.	Value.
Gold..................	2.075 fine ozs.	$42,900
Silver..................	37,300 “	48,220 (coining value)
Copper................	129,330,749 pounds.	13,903,055.51 (est.)

	Year 1896.	Value.
Gold..................	1,800 fine ozs.	$37,200
Silver..................	59,000 “	76,283 (coining value)
Copper................	143,524,069 pounds.	15,758,942.78 (est.)

	Year 1897.	Value.
Gold..................	3,033 fine ozs.	$62,700
Silver..	60,437 “	77,964 (coining value)
Copper	145,282,059 pounds.	16,402,344.46 (est.)

	Year 1898.	Value.
Gold......	5 fine ozs.	$100
Silver..................	32,400 “	41,891
Copper............ ..	158,491,703 pounds.	19,066,551.87 (est.)

Dividend Paying Copper Mines in the United States.

Name of Company.	Shares.	Par Value.	Capital.	Dividends Paid in 1899.	Total Dividends Declared or Paid to Dec. 5, 1899.
Amalgamated	750,000	$100	$75,000,000	$1,500,000	$1,500,000
Anaconda	1,200,000	25	30,000,000	3,900,000	12,150,000
Atlantic	40,000	25	1,000,000	....	780,000
Boston & Montana	150,000	25	3,750,000	5,400,000	14,525,000
Calumet & Hecla	100,000	25	2,500,000	10,000,000	65,850,000
Central	20,000	25	500,000	....	1,970,000
Franklin	40,000	25	1,000,000	....	1,240,000
Mont. Ore Pur	80,000	25	2,000,000	560 000	1,360,000
Osceola Con	*100,000	25	2,500,000	558,000	3,098,750
Parrot	†230,000	10	2,300,000	897,000	3,035,000
Quincy	100,000	25	2,500,000	950,000	11,070,000
Tamarack	60,000	25	1,500,000	600,000	6,270,000
Wolverine	60,000	25	1,500,000	210,000	270,000
Total dividends by 13 mines				$24,575,000	$123,118,750

*7,000 shares in treasury.
†150 shares in treasury.

European Copper Statistics.

In Tons of 2,240 Lbs.

Stocks.	1899. Dec. 1.	1898. Dec. 31.
Liverpool and Swansea, Chili Bars, etc.	3,920	14,630
Liverpool and Swansea, other than, and English	10,220	4,030
London, including landing	1,700	800
France	3,600	2,900
Stocks, Tons	19,440	22,360
Afloat from Chili	3,300	3,000
Afloat from Australia	3,100	2,600
Visible Supply, Tons	25,840	27,960

European visible supply of Copper on the following dates, in tons of 2,240 lbs. fine:

Date.	Total Visible Supply.
December 1, 1899	25,840 tons.
December 31, 1898	27,960 "
December 31, 1897	31,955 "
December 31, 1896	34,927 "
December 31, 1895	45,817 "
December 31, 1889	98,847 "
December 31, 1888	104,001 "

London Copper Prices.

The following table gives the highest and lowest prices of G. M. B. Copper in London for 20 years:

IN POUNDS PER TON OF 2,240 LBS.

	1899. To Dec. 1.	1898.	1897.	1896.	1895.
Highest..	*79 2 6	57 8 9	51 15 0	50 8 9	47 8 9
Lowest...	†58 1 3	49 5 0	47 0 0	40 10 0	38 13 9

	1894.	1893.	1892.	1891.	1890.
Highest..	43 0 0	46 16 3	47 18 9	56 10 0	61 12 6
Lowest...	37 17 6	40 12 6	43 10 0	44 1 3	46 10 0

	1889.	1888.	1887.	1886.	1885.
Highest..	80 0 0	105 0 0	85 5 0	43 15 0	50 0 0
Lowest...	35 0 0	73 0 0	38 7 6	38 10 0	38 10 0

	1884.	1883.	1882.	1881.	1880.	1879.
Highest..	58 0 0	67 10 0	71 10 0	72 10 0	74 0 0	67 10 0
Lowest ..	47 5 0	57 0 0	63 0 0	57 0 0	54 10 0	53 0 0

*June, 1899. †Jan., 1899.

Copper Statistics.

FOR YEAR 1898.

1898. Month.	Price of Lake Ingot Copper at New York. Lowest. Cents per Lb.	Price of Lake Ingot Copper at New York. Highest. Cents per Lb.
January.......	11.00	11.00
February.....	11 00	11.75
March.........	11.75	12.00
April.........	12 00	12.50
May..........	12.00	12.00
June.........	11.75	12.00
July..........	11.50	11.87½
August	11.50	12.50
September...	12.25	12.50
October......	12.37½	12 62½
November ...	12.62½	13.00
December....	12.87½	13.25
Year.......	11.00	13.25

1898. Month.	Prices of Spot "Standard" Copper in London. Lowest. £ s. d. Ton.	Prices of Spot "Standard" Copper in London. Highest. £ s. d. Ton.	Reported Sales. Tons.
January......	48 6 3	49 5 0	18,600
February.....	49 2 6	50 10 0	19,000
March........	50 0 0	51 2 6	28,875
April..	50 17 6	53 2 6	20,650
May..........	51 0 0	52 1 3	23,650
June.........	49 7 6	51 5 0	23,625
July..........	49 10 0	50 15 0	18,050
August.......	50 1 3	52 3 9	24,700
September...	51 13 9	52 6 3	15,500
October......	52 8 9	54 15 0	24,850
November ...	54 6 3	56 12 6	31,050
December....	55 0 0	57 8 9	17,250
Year.......	48 6 3	57 8 9	265,800

1898. Month.	European Copper Supplies and Deliveries. For Year 1898. Total Supplies. Tons.	European Copper Supplies and Deliveries. For Year 1898. Total Deliveries All Europe. Tons.
January.....	15,158	17,367
February.....	17,672	18,156
March........	19,130	20,369
April.........	23,811	22,943
May..........	19,365	20,467
June.	19,145	18,833
July..........	19,978	18,213
August.......	15,202	16,666
September....	20,657	21,471
October......	17,800	19,585
November....	20,840	19,241
December.....	22,600	21,600
12 Months....	230,853	234,911

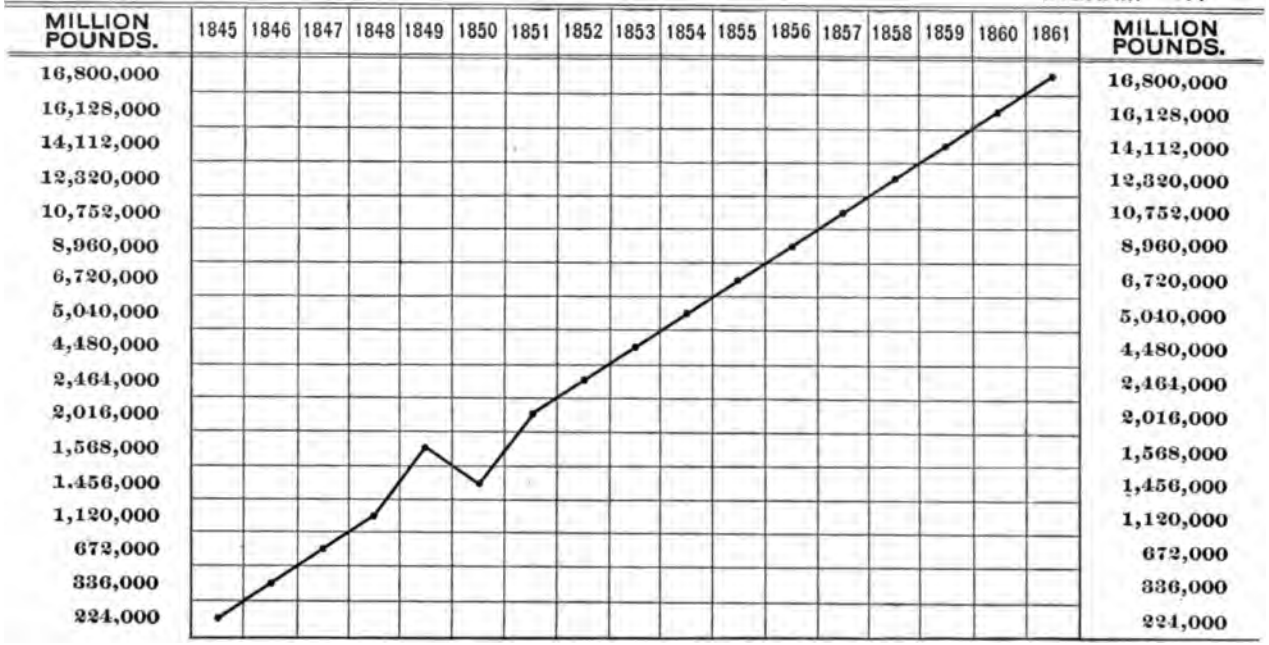
Copper Statistics.

FOR FIRST ELEVEN MONTHS, 1899.

1899. Month.	Price of Lake Ingot Copper at New York.		1899. Month.	Prices of Spot "Standard" Copper in London.		Reported Sales. Tons.	European Copper Supplies and Deliveries. January 1 to December 1, 1899.		
	Lowest. Cents per Lb.	Highest. Cents per Lb.		Lowest. £ s. d. Ton.	Highest. £ s. d. Ton.		1899. Month.	Total Supplies. Tons.	Total Deliveries All Europe. Tons.
January......	13¼	17	January......	58 1 3	69 15 0	53,450	January......	18,904	20,785
February.....	17	18⅛	February. ...	70 7 6	75 10 0	31,600	February.....	13,716	15,405
March........	17¼	18	March........	66 7 6	71 13 9	47,450	March........	21,225	17,054
April.........	18	19⅜	April.........	70 15 0	77 15 0	39,650	April.........	16,105	18,073
May..........	18⅛	19¼	May..........	76 0 0	79 2 6	23,800	May..........	19,701	16,074
June.	17⅞	18½	June.........	74 17 6	76 18 9	18,950	June.........	17,925	17,202
July..........	18¼	18½	July..........	76 0 0	77 12 6	17,500	July	20,342	15,827
August.......	18⅛	18¾	August.......	75 12 6	76 15 0	12,125	August.......	17,965	18,595
September....	18⅜	18¼	September....	75 10 0	77 2 6	14,425	September....	18,573	20,358
October.......	17	18⅛	October.......	72 11 3	76 7 6	24,025	October	19,799	18,329
November....	17	17¼	November....	72 2 6	75 15 0	17,100	November....	18,650	19,689

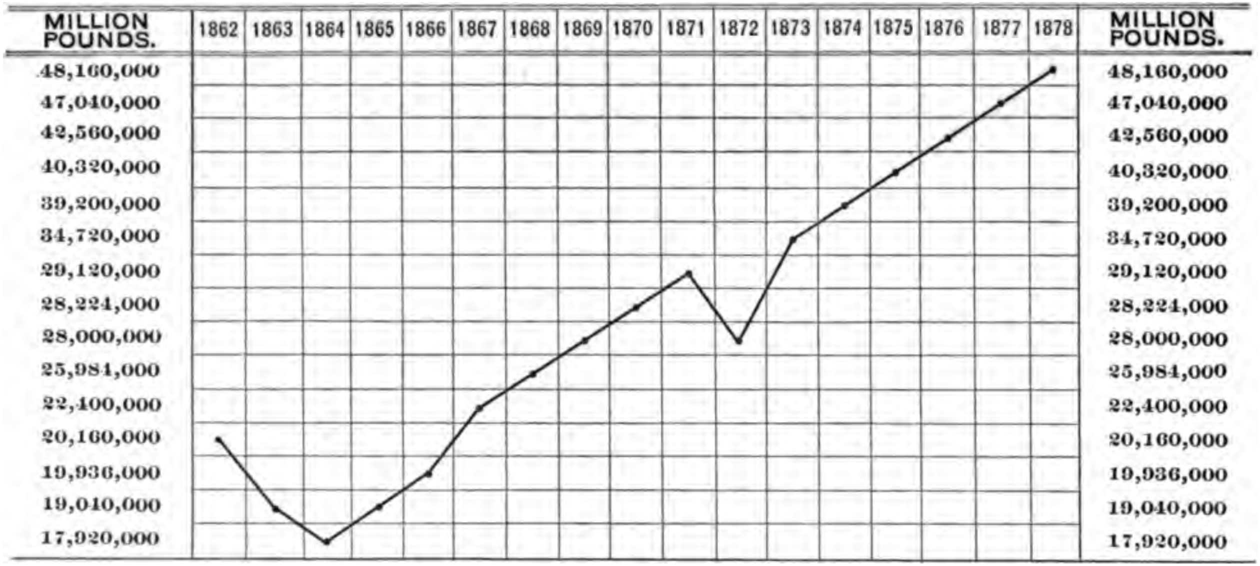
COPPER PRODUCTION OF THE UNITED STATES.

DIAGRAM No. 1



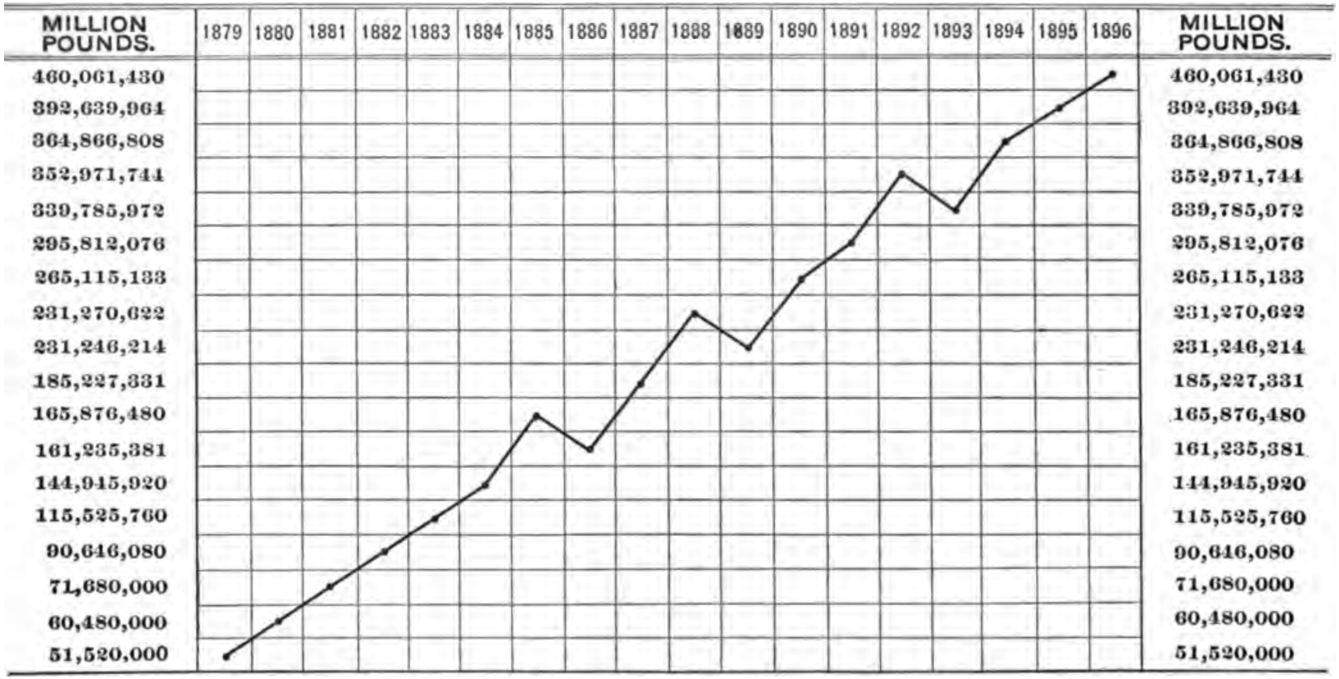
COPPER PRODUCTION OF THE UNITED STATES.

DIAGRAM No. 2



COPPER PRODUCTION OF THE UNITED STATES.

DIAGRAM No. 3



Year 1897, production..................................506,078,274 pounds.
Year 1898, production..................................546,262,987 pounds.
First ten months 1899, production..................................482,050,240 pounds.

Rates of Commissions Established by the Boston Stock Exchange,

IN FORCE 1899.

BONDS—lots of Five Thousand, and over, on par value	⅛ per cent.
Lots of less than Five Thousand,	¼ per cent.

Interest to be added at rate named in the Bond, except when in default.

BANK STOCKS—per share	25 cents
INSURANCE STOCKS—per share	25 cents
MANUFACTURING STOCKS	¼ per cent.

The above stocks, when selling at double their par, the Commission to be doubled.

SPECIAL RATES.

AMERICAN BELL TELEPHONE—when selling below $200 per share, is, for lots of 50 shares and over	25c. per share
For lots of less than 50 shares	50c. per share
When selling at $200 per share or over, for all lots	50c. per share
CALUMET AND HECLA—for all lots, per share	50 cents

Government Bonds and Bills of Exchange are exempt from the regular rates.

ALL OTHER STOCKS,

SELLING at $10 and over, per share	12½ cents
" below $10 and at $5 or more	6¼ cents
" below $5 and at $1 or more	3⅛ cents

The three above, when selling in lots of less than 50 shares, the Commission to be doubled.

" below $1 per share, $1 per 100 shares or any part thereof.

EXTRACT FROM BY-LAWS.

The penalty for a violation of these rates shall be, for the *first offence*, suspension for a period of from one to two years, the term to be fixed at the discretion of a majority of the Governing Committee present at a meeting thereof. For the *second offence*, the penalty shall be expulsion, and the membership of the party expelled shall be disposed of forthwith by the Governing Committee.

M. R. BALLOU, *Chairman*,
Committee on Commissions.

Copper Contract in force on the London Metal Exchange.

The London Metal Exchange adopted a new form of copper contract in February, 1898, the quality deliverable on said contract being known as "Standard Copper." Either "Refined" or "Rough" copper may be delivered under this contract in conformity with the following rule, viz.:

"Sellers have the option to deliver each 25 tons, either in 'Refined' or 'Rough' quality. 'Refined' to be invoiced at the above price net money (i. e., contract price). 'Rough' to be invoiced with an allowance of 4 pounds per ton draft, and a discount of 2½ per cent."

While this contract does not affect the total stocks of copper, yet as it covers a wide variety of brands subject to the conditions stated, it is therefore considered more favorable for sellers.

LIST OF REFINED COPPER DELIVERABLE UNDER THIS CONTRACT.

[Refined Copper *is Copper which has passed through a Refinery.*]

(*a*) In Cakes, Ingots, or Tiles:—

English.—Tough and Best Selected, being the manufacture of the following firms, of usual good merchantable quality, and bearing their recognized brands.

Bede Metal & Chemical Co., Ltd.,
John Bibby, Sons & Co.,
Thomas Bolton & Sons,
Broughton Copper Co., Ltd.,
Cape Copper Co., Ltd.,
Elliott's Metal Co., Ltd.,
Henry Hills & Son,
Charles Lambert & Co.,
Landore Copper Co.,
Logan & Co.,
Nevill, Druce & Co.,
Newton, Keats & Bolton,
Rio Tinto Co., Ltd.,
W. Roberts,
S. Helens Copper Co , Ltd.,
Tharsis Sulphur and Copper Co., Ltd.,
United Alkali Co., Ltd.,
Vivian & Sons,
H. H. Vivian & Co., Ltd.,
Williams, Foster & Co , and Pascoe, Grenfell & Sons, Ltd.

American.—Atlantic—B.C.W.—Calumet & Hecla—Central—C.N.C.—Franklin—K. A. S.—Kearsarge—M. A.—O. A.—O. C.—Osceola—Quincy—Tamarack—Tamarack Junior—Wolverine.

Australian.—Cobar—E. A. C. C.—Hope—Lloyd—N. G. E.—P. C. C.—Wallaroo.

Chilian Ingots.—Lota—Urmeneta.

German.—H.D.K.—H.O.K.—M.R.

Japanese.—Furukawa Small Ingots, Ani Tiles, Sumitomo Ingots.

(*b*) Electrolytic in Cathodes, Ingots, Cakes, or Wirebars.

American.—Balbach—B.E.R.—L.N.S.—N.E.C.

English.—Elliott—Mersey—Lambert—Vivian & Sons.

German.—N.A.

LIST OF ROUGH COPPER DELIVERABLE UNDER THIS CONTRACT.

American.—A.C.C.—B. & M.—C.Q.—D.—O.D.

Chilian.—A. Edwards—B. Larrain—C.C.C.C.—Chuchini (C. Lopez)—C. Julian, Cabildo—C.M.M.—(Compa. M. de Maipu)—C. V. Angeles (R. Humeres)—E.C.T. (E. Concha y Toro)—E.E.C. (J. & J. Edwards) Felix Vicuna—F.P.P. (Perez)—G. (Geisse)—Huidobro Hnos.—I. V. (Villaroel)—J. J. E. (Echeverria)—Lambert 2—Lambert V—Las Palmas, M. de F. (F. Zanetta) Lota—Maitenes, C. C. y C. (Cousino)—U (Undurraga)—Urmeneta V.A., Catemu (Vidal Aragon)—V.H. (Varas Hnos)—Vicuna (S. Vicuna and Co.)—Yllapel, Y. Silva.

English.—C.L. & Co.—Ditton—H.H.S.—Morfa—V.S.

Japanese.—

Turkish.—Tokat.

London Quotations and Equivalents.

London prices of copper and the equivalents in United States currency, with the rate of exchange to the pound sterling, as indicated below. The usual discount of 2½ per cent., deducted from price of copper in London, is equal to sixpence per £ sterling, but the discount is not deducted from these calculations.

RATE OF EXCHANGE, $4.85.

Price Per Ton of 2,240 Lbs. London.		Equal to Price Per Lb. U. S. Currency. Cents.	Price Per Ton of 2,240 Lbs. London.		Equal to Price Per Lb. U. S. Currency. Cents.
£38	=	8.22	£64	=	13.85
39	=	8.44	65	=	14.07
40	=	8.66	66	=	14.29
41	=	8.87	67	=	14.50
42	=	9.09	68	=	14.72
43	=	9.31	69	=	14 93
44	=	9.52	70	=	15.15
45	=	9.74	71	=	15.37
46	=	9.95	72	=	15.58
47	=	10.17	73	=	15.80
48	=	10.39	74	=	16.02
49	=	10.60	75	=	16.23
50	=	10.82	76	=	16.45
51	=	11.04	77	=	16.67
52	=	11.25	78	=	16.88
53	=	11.47	79	=	17.10
54	=	11.69	80	=	17.32
55	=	11.90	81	=	17.53
56	=	12.12	82	=	17 75
57	=	12.34	83	=	17.97
58	=	12.55	84	=	18.18
59	=	12.77	85	=	18.40
60	=	12.99	86	=	18.62
61	=	13.20	87	=	18.83
62	=	13.42	88	=	19.05
63	=	13.64	89	=	19.27

LONDON QUOTATIONS AND EQUIVALENTS.

CONTINUED.

Price Per Ton of 2,240 Lbs. London.		Equal to Price Per Lb. U. S. Currency. Cents.	Price Per Ton of 2,240 Lbs. London.		Equal to Price Per Lb. U. S. Currency. Cents.
£90	=	19.48	£126	=	27.28
91	=	19.70	127	=	27.49
92	=	19.92	128	=	27.71
93	=	20.13	129	=	27 93
94	=	20.35	130	=	28.14
95	=	20.56	131	=	28.36
96	=	20.78	132	=	28.58
97	=	21.00	133	=	28.79
98	=	21.21	134	=	29.01
99	=	21.43	135	=	29.22
100	=	21.65	136	=	29.44
101	=	21.86	137	=	29.66
102	=	22.08	138	=	29.87
103	=	22.30	139	=	30 09
104	=	22.51	140	=	30.31
105	=	22.73	141	=	30.52
106	=	22 95	142	=	30.74
107	=	23.16	143	=	30.96
108	=	23.38	144	=	31.17
109	=	23.60	145	=	31.39
110	=	23.81	146	=	31.61
111	=	24.03	147	=	31.82
112	=	24.25	148	=	32.04
113	=	24.46	149	=	32.26
114	=	24.68	150	=	32.47
115	=	24.89	151	=	32.69
116	=	25.11	152	=	32.91
117	=	25.33	153	=	33.12
118	=	25.54	154	=	33.34
119	=	25.76	155	=	33.55
120	=	25.98	156	=	33.77
121	=	26.19	157	=	33 99
122	=	26.41	158	=	34.20
123	=	26.63	159	=	34.42
124	=	26.84	160	=	34.64
125	=	27.06			

Foreign Copper Mines.

In addition to the copper properties described in this volume, mining for this metal is carried on more or less extensively in various parts of the world. Chili has been a large producer of copper, and during the year 1898 turned out 24,850 tons. Within the space of five years Australia has doubled its output of copper, and in 1898 produced 18,000 tons. The Wallaroo & Moonta Mining Co. and other mines in that country have found extensive ore deposits. The Mount Lyell Company of Tasmania has developed a valuable property. Japan produced 25,175 tons of copper in 1898, and copper deposits are found in China also. Mexico furnishes a good supply of copper annually. Copper is also found in Cuba, and recent assays of deposits there show ore carrying from 40 to 50 per cent. copper when found in pits near the surface. The red metal exists even in the Philippine Islands, and Turkey can boast of having sent copper to market. Deposits of copper are to be found in many quarters of the earth, but this country leads the world both as to the quality and the quantity of the article produced.

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